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IN THE

United States Court of Appeals

FOR THE THIRD CIRCUIT

NOS. 12908, 12929, 12930

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC., *Petitioner*

v.

FEDERAL POWER COMMISSION, *Respondent*

THE CITY OF NEW YORK, *Petitioner*

v.

FEDERAL POWER COMMISSION, *Respondent*

TRANSCONTINENTAL GAS PIPE LINE CORPORATION, *Petitioner*

v.

FEDERAL POWER COMMISSION, *Respondent*

JOINT APPENDIX ON PETITIONS TO REVIEW DECISIONS AND ORDER OF FEDERAL POWER COMMISSION

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(1)

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BEFORE THE FEDERAL POWER COMMISSION

In the Matters of:

TRANSCONTINENTAL GAS PIPE LINE CORPORATION	Docket Nos. G-13143, G-13590, G-13745
NEW YORK STATE NATURAL GAS CORPORATION	Docket No. G-13793
TEXAS EASTERN TRANSMISSION CORPORATION	Docket No. G-13793
TRANSCONTINENTAL GAS PIPE LINE CORPORATION	Docket No. G-13793

Hearing Room FG
Federal Power Commission
441 G Street, Northwest
Washington, D. C.
Monday, March 10, 1958

The above-entitled matters came on for hearing, pursuant to notice, at 10:00 o'clock a. m.

Before:

FRANCIS J. COSTELLO, Presiding Examiner.

Appearances:

JAMES B. HENDERSON, General Counsel and WILLIAM N. BONNER, 3100 Travis Street, Houston, Texas, appearing on behalf of Transcontinental Gas Pipe Line Corporation.

RICHARD J. CONNOR and JOHN T. MILLER, of Gallagher, Connor & Boland, 821 15th Street, N. W., Washington, D. C., appearing on behalf of Transcontinental Gas Pipe Line Corporation.

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JOHN A. McGRATH and JEROME J. McGRATH, of McGrath & McGrath, 520 Shoreham Building, Washington 5, D. C.; R. E. L. HALL, Southern Building, Washington 5, D. C.; and WELLY K. HOPKINS, 900 15th Street, N. W., Washington 5, D. C., appearing on behalf of National Coal Association; United Mine Workers of America; Fuels Research Council, Inc.; and Anthracite Institute.

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RANDALL J. LEBOEUF, JR., and HALCYON G. SKINNER, of LeBoeuf, Lamb & Leiby, 15 Broad Street, New York, New York, appearing on behalf of Consolidated Edison Company of New York, Inc.

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Mr. LeBoeuf: Mr. Examiner, I might say a word before I call my first witness.

We support these applications in our serious need for additional gas service particularly to meet the demands of the next winter.

As far as this program relates to Consolidated Edison, it involves 30,000 Mcf per day of storage gas from the Leidy and Tamarack Field and 50,000 Mcf per day of X-20 gas service.

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X-20 gas service is a new service from Transcontinental and the combines a firm commitment for gas for resale up to sixty days of the year, and a firm commitment for gas for the remaining part of the year—gas transportation service.

Now we recognize that that gas in the transportation service is bought under contracts in Texas by Consolidated Edison to be transported by Transco from producers who have made a condition that that portion of the gas will not be available for resale.

We also recognize that it involves the use of that portion of the gas as boiler fuel and if as we will point out through our witnesses, whatever the questions that may normally be raised with respect to conservation views, the views of the coal interests, that we have a unique problem in New York City with respect to Smoke control or air pollution, so that we are laying right before your Honor at this moment the problem which may be controversial and which we will meet by our testimony.

* * * * * * * * * * *

Otto W. Manz, Jr.

was called as a witness and, having been first duly sworn, was examined and testified as follows:

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* * * * * * * * * * *

Direct Examination

By Mr. LeBoeuf:

Q. Will you please state your name and address? A. My name is Otto W. Manz, Jr.

My address is 4 Irving Place, New York 3, New York.

Q. What is your position with Consolidated Edison Company of New York, Inc.? A. I am executive vice president of Consolidated Edison Company of New York Inc., and have been continuously in the employ of the Edison Company or its predecessors since 1925.

* * * * * * * * * * *

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. . . . . .

Q. What is the scope of your testimony to be in this proceeding? A. My testimony will be directed to a brief description of the gas supply problems confronting the company, the plan the company has to meet these problems, our progress in executing the plan and the management's reasons for adopting the proposed approach.

Another witness for the company will describe in detail the underlying economic and physical factors.

Q. What are the company's plans? A. For the reasons I will explain later, the company

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wishes to acquire an 180 Mmcf/day increase in gas supply before the 1959-1960 heating season which will comprise 60 Mmcf of storage service, half from Transcontinental Gas Pipeline Corporation and half from Tennessee Gas Transmission Company and by purchasing 120 Mmcf of X-20 service from Transcontinental.

Q. Will you please describe what this X-20 service is that you are seeking in this proceeding? A. This X-20 service is a new service for Transcontinental. It is essentially the same contract demand service as CD-3 with Con Edison having the option to receive either gas bought in the field by Transcontinental or gas which Con Edison itself buys in the field and Transcontinental transports to New York. It combines a supply of firm resale gas for up to sixty days in any year with a firm transportation service during the balance of the year.

The sixty days' annual supply of firm gas will furnish a very valuable winter service to meet our customers' rapidly increasing heating loads and the firm transportation service will become the basis of what the company

hopes will be a major contribution to combat the problem of air pollution in New York.

Q. How is this rate patterned? A. The rate is patterned after Transcontinental's CD rate schedule for long term firm gas.

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Under it, Transcontinental will furnish Con Edison with gas unrestricted as to end use for as many as sixty days in each year whenever Con Edison requests it.

Transcontinental will supply this gas from its own reserves thus making it equivalent to firm CD gas both in price and in availability for unrestricted use to meet gas system sales.

During the rest of the year, Transcontinental's X-20 service will provide Con Edison with firm transportation capacity at a price equal to the transportation component of the CD rate.

Transcontinental will use this capacity to transport to New York gas which Con Edison has been able to purchase advantageously in Texas.

Q. Are there any restrictions on the purchases of gas which are made in Texas? A. Yes.

That is gas purchased in Texas is restricted by contract to use as a fuel.

Q. What is the effect of this restriction? A. When it is received in New York it will thus become a firm supply of gas to reduce the objectionable stack emissions from electric and steam generating plants.

This flexibility of time and type of use at the option of the Company makes the X-20 service uniquely adapted to the best interest of the community we serve.

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Q. How does the company propose to use this additional gas supply? A. The company proposes to use this addi-

tional gas supply in a manner beneficial to our gas, electric and steam consumers and to the general public to meet three specific problems.

Q. What is the first? A. Well, first, winter gas loads are expected to grow 100 Mmcf/day over the next three years.

Q. What is the second? A. Second, additional gas is needed to offset losses in existing supply:

(a) 32 Mmcf/day of the present supply from Transcontinental is temporary and must be replaced by next fall.

(b) The operation of the Hunts Point oil gas plant has become uneconomic and impractical. 51 Mmcf/day are needed to permit its retirement next year.

Q. What is the third problem you are trying to solve? A. Third, the Company's mid-Manhattan generating stations require 120 Mmcf per day to provide adequate smoke control.

25 Mmcf per day of this is required at Waterside all year round.

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By the substitution of oil on cold days when the gas capacity is required for gas distribution, the other 95 Mmcf per day can be used on an interruptible basis provided the supply is assured. Thus the same pipeline capacity which is required to meet the first and second points above will be adequate to supply the gas for smoke control.

Q. What are the economic results of this program, in your opinion? A. The results of this program are favorable to the company. It will reduce capital expenditures for smoke control by $17,650,000 even after spending $7,250,000 for alternate oil burning equipment at East River.

Annual operating expenses will be reduced $4,000,000 by Transco's X-20 service and $610,000 by Transco's storage service.

Together these services will add 150 Mmcf of natural gas capacity. The company must have this capacity to meet its gas load and the only practical way to provide it is with an additional supply of natural gas.

Q. Mr. Manz, will you describe the air pollution problem to which you earlier referred? A. The smog conditions which have occurred in several of this country's cities have focussed public attention on the necessity for controlling air pollution in major congested areas such as the New York region.

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Our company has been acutely aware of its responsibilities. We have been under fire for years to reduce the smoke coming from the stacks of our generating stations and have spent over $45 million to improve the condition of our smoke stacks and plan to spend another $18 million over the next five years.

Q. Will you please elaborate? A. A large generating station consumes an enormous amount of fuel. For example, the Company's two plants at Waterside and East River each burned over a million and a half tons of coal in 1957. Such a concentration of coal consumption in any one place will produce enormous quantities of fly ash which are difficult to control under the best conditions.

Smoke control is dependent on (a) large expenditures of money, plus (b) adequate ground space. In our newer stations where we have sufficient room to install large capacity modern equipment to clean the smoke, the company is able to maintain good control of stack emissions but it is a difficult matter at Waterside.

Q. Why? Waterside is the second oldest plant on our system and is the nearest thing on land to the compact boiler plant of a battleship. Fifty years ago it had a rated capacity of 145,500 kw of low pressure steam gen-

erating equipment. Since then its capacity has more than quadrupled

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in the same two city blocks to 658,200 kw and in addition it sent out 10 billion pounds of steam in 1957.

Q. Have there been any official requests made of the company by city officials in regard to smoke control? A. The Mayor and the City's Department of Air Pollution Control are continuously calling us to task about the stack emissions at Waterside.

The Company has installed at Waterside the most modern equipment to control stack emissions but we have been unable to completely overcome the space limitations.

As you can see from the photographs, Plates 2 through 6, the only direction Waterside can expand is upward with a consequent increase in investment and operating costs.

Con Edison wants to comply with the regulations of the city and the very legitimate requests of the adjoining property owners but we cannot saddle our consumers with unlimited costs to obtain this objective.

Our problem is to strike a reasonable economic balance between the cost to our customers and the benefit to the community.

Q. What in your opinion is the relationship of your program to the needs of the community? A. The gas supply program I outlined above is the most efficient way the company has been able to work out to meet the requirements of the community.

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It will satisfy the increased gas capacity requirements for the immediate future and at the same time will provide the gas needed for smoke control.

So that stack emission control may be maintained on a year round basis and still make this natural gas capacity

available to the gas system in winter, the company plans to spend $7¼ million to install stand by oil burning equipment at the East River Station.

Substituting oil as a fuel in cold weather will make it possible to transfer 95 Mmcf/day of gas capacity to the gas system on demand.

Furthermore the installation of gas and oil burning equipment will reinforce the fuel supply to both the Electric and Steam systems in the event of an interruption of coal deliveries such as New York has had in the past because of weather and of strikes.

The company intends to retain 25 Mmcf per day of gas for fuel at Waterside on a year round basis under normal operating conditions.

Of course, this 25 Mmcf per day gas capacity would be made available to the gas system in an emergency by substituting Transco gas for the company purchased Texas gas.

Q. What is the time schedule on these proposed new services? A. The proposed new supplies are scheduled to become

available over the next two years. The first fifty Mmcf/day of X-20 service is planned for this fall. The Company must have this gas to meet next winter's load.

It will also provide enough fuel to correct the worst stack conditions at Waterside but more gas will be required to correct the East River stack conditions. The 30 Mmcf/day of Tennessee Gas Transmission storage service is expected to be available for the winter of 1959-1960 and the company is negotiating to have the service date advanced to the winter of 1958-1959.

Q. What would be the situation in the fall or early winter of 1959?

In the fall or early winter of 1959, the 30 Mmcf per day of Transcontinental storage service and the 70 Mmcf per day of balance of the X-20 service are scheduled to become available.

Q. What is the present status of the Company's negotiations for these additional amounts of gas or gas service? A. The present status of the company's negotiations for the 180 Mmcf per day we will need is as follows:

> "Contracts or precedent agreements which have been executed with Transcontinental for thirty Mmcf per day of the storage service and for 85 Mmcf per day of the X-20 service. The Company has contracted for sufficient gas in Texas to support the Transportation

> phase of the X-20 service. Mr. Thomas who participated in the negotiation of these contracts will describe them in more detail in his testimony."

The Company's Board of Trustees has authorized the purchase of the storage service from Tennessee. However, no contracts have been executed yet Negotiations are also in progress looking to the purchase of 35 Mmcf per day more gas in Texas to complete the Company's requirements for smoke control.

Q. Have you had any difficulties in connection with the operation of your gas peak shaving plants? A. Yes, we have a major problem confronting the company and it is the growing impracticability of continuing to operate the high BTU oil gas peak shaving plants.

After the introduction of natural gas we found it economical to retire the Hunts Point Coke ovens in 1954, and in 1957, the Pelham and Ravenswood converted water gas plants.

Q. Do you have any plans for the retirement of the Hunts Point and Astoria Gas plants? A. Yes. It is highly

important that Hunts Point and Astoria Gas plants be retired as soon as alternate capacity can be provided.

Q. Why? A. The remaining equipment in these plants was

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originally designed to produce water gas of 537 Btu per cubic foot.

When the Company changed over to natural gas distribution, the water gas sets were converted for high Btu oil gas operation at approximately 1000 Btu/cubic foot. Their operation has always proved difficult. There are many maintenance problems if the sets are run for any length of time and the output leaves much to be desired on the grounds of interchangeability with natural gas.

Gas leak calls to our emergency forces always show a marked increase when oil gas is made. Oil gas plants are also very expensive. Taxes and other fixed charges are disproportionately high.

Our out of pocket operating expenses alone amounted to $7.50 for each Mcf we made in 1957. Natural gas for the same use will cost 34.2 cents per mcf under the X-20 service.

Q. Do you have a trained manpower problem? A. That is one of our most troublesome problems and it has to do with the maintenance of trained manpower needed to operate these high Btu oil gas plants.

In 1949 the company had nearly 2,000 men working in the gas plants.

Since that time the force has decreased steadily until at the end of 1957 it was 117 men.

In addition some 400 gas men are reassigned in the system

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to positions where they can be recalled for peak shaving operations.

Since full operation of the Hunts Point and Astoria Stations requires 450 men, it is obvious that the operation of the oil sets in these plants is becoming more and more difficult. The complications involved in transferring trained operators on short notice will in the very near future make continued maintenance of these plants wholly impractical.

The manning of oil sets for peak shaving requires a careful and up to date record of every man's work location and shift assignment so that he can be reached on short notice at work or at home. The attrition of experienced supervisors as well as operating personnel already requires 12 hour daily shifts when these plants go on the line.

Q. Does this condition affect the proficiency of the employees? A. Well, even the most experienced operators tend to lose their interest and their proficiency in the work when the plants are only operated for a few days a year. These plants were kept constantly ready for operation this winter, yet were operated on only eight days.

Also these men normally work on shifts in other departments and must be relieved on an overtime basis. The present plan envisages the retirement of the Hunts Point plant late in 1959 and the Company proposes to retire the Astoria Plant

when the necessary alternate capacity can be provided.

Q. Turning back to the air pollution matter what has the company done to meet this problem?

Objectionable stack emissions from generating stations within the city limits is a serious community problem and the company has been working for years trying to find a solution at a cost the public can afford.

The company installed the most modern and efficient

dust collecting equipment available at the time each new boiler was installed.

Present practice is to pass flue gases through both mechanical and electric dust removers in series. These do a very efficient job when they are designed as an integral part of a new station and where there is room to build them large enough.

Many of the boilers at the Hudson Avenue and Hell Gate stations have been converted to use oil for fuel rather than coal as a means of reducing stack emissions. Human error is reduced to a minimum by the use of television sets which show the boiler operators the conditions of the stacks at all times.

Q. What is the situation specifically at your Waterside and East River plants? A. The situation is difficult at Waterside and East River where the plants were built many years ago, in the heart of congested Manhattan.

The Waterside station when it was built 57 years ago, for example, occupied an undesirable piece of property alongside the slaughter houses.

In the intervening years a new city has been built up around it. The slaughter houses have been replaced by the new United Nations building and modern residential apartments of Tudor City directly across the street.

Similarly, slum clearance projects have located modern apartment houses to the South and West of the East River station.

Obviously, it made little difference to the public at the time these stations were built what fuel was used or how it was burned.

Now, however, anything short of the most efficient modern methods of controlling stack emissions will seriously inconvenience the public.

Q. What is the output of these two stations, Waterside

and East River? A. These two stations produce 13 billion pounds or 65 per cent of the steam sold by the company in 1957, and they were expected to produce 75 per cent in 1958.

It is more desirable from the public viewpoint to produce the combined heating need of 2870 buildings at a few efficient plants than in each individual building.

Waterside and East River also supplied six billion kwh

or 39 per cent of the electricity generated in Company plants.

The steam distributed from these plants is in general used for the same services as the gas the Company sells, and the annual sendout is equivalent to the gas sent out for the total residential heating.

Presently, the fuel normally used at these stations is coal supplemented by small quantites of gas from the local distribution system used principally for ignition purposes.

When part of the coal is replaced by gas and oil to reduce smoke as the Company proposes here 49 per cent of the fuel will be gas, .2 per cent will be oil and coal will still supply about half of the total fuel.

Q. In dealing with this meeting of the smoke control problem you have constantly referred to the space for the plants in congested areas.

What is the specific condition at Waterside? A. The topping installation at Waterside whereby high pressure turbines were superimposed on existing low pressure turbines to improve the economy of operation and to conserve space was started in 1937 and is one of the first large scale projects of its kind to be attempted in this country.

It was further complicated by the rigid space restrictions. Quite naturally some of the innovations have caused us operating problems.

After years of experimentation with various methods of

smoke control the Company is convinced that it would be necessary to rebuild two large boilers at Waterside at a cost of $12 million if smoke is to be held within satisfactory limits when coal is used as a fuel.

Furthermore, the rebuilding job would take two years for each boiler. This high cost results from the crowded and inadequate space conditions at this plant.

Q. Aside from cost would it be feasible at this time to rebuild these boilers? A. The company lacks the reserves to take this capacity off the system for four years and at the same time to maintain electric and steam service to the public.

The 50 Mmcf per day of X-20 service which Transcontinental is asking approval for in this docket will provide enough gas at an economical price to alleviate the worst smoke conditions at Waterside.

Q. Will you turn to plate 9 of your exhibit 22 and explain its significance in connection with the air pollution problem? A. Plate 9 of our exhibit No. 22 which will be testified to by Mr. Thomas shows the present hourly fly ash coming out of the stacks at Waterside station.

You will notice that over half of the total fly ash from the whole station originates in Boilers 71 and 72. That is the third column from the left on Plate 9—and

they also contribute over eighty per cent of the unburned carbon—the next column fourth from the left,—the ingredient which makes smoke objectionable to the housewife.

Flue gases from these boilers now pass through mechanical dust collectors to remove the larger particles and then through electric precipitators to remove the smaller fly ash.

In spite of this, there is still so much residue that the residents of Tudor City have complained to the Department.

of Air Pollution Control demanding better control of objectionable stack emission.

The company is willing and anxious to take all reasonable steps to reduce these stack emissions but we must find some way of doing this at a price our customers can afford.

Our proposal is to fire these boilers with gas all the year round. This plate shows that the use of gas will eliminate both the fly ash and unburned carbon.

Q. What would be the effect of converting to gas firing the East River boilers using Stacks 1 and 2. A. By converting to gas firing the East River Boilers using stacks 1 and 2, the total fly ash emitted by that station can reduced by 58 per cent and unburned carbon by 84 per cent.

The additional 70 Mmcf per day of X-20 service planned for the fall of 1959 will permit the extension of the smoke control program to East River.

Coupled with the installation of standby oil burning

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equipment, the X-20 service will provide 95 Mmcf per day of effective capacity for the gas system.

Q. Mr. Manz, will you turn to the paragraphs which I believe are plates 2 to 6 of Exhibit 22 and I first call your attention to plate 2 which is an aerial photograph of Manhattan Island in part, and will you describe the conditions that are relevant to the testimony you have just given? A. Well, the river to the left is the North or Hudson River, and the River to the right is the East River.

On the East River halfway up the photograph with smoke coming out of its stacks is the East River Station at 14th Street and the East River.

And follow up the shore line of the East River a little further up in the photograph, we can find a smudge which indicates Waterside station, and that single white line about a quarter of an inch tall and pencil, pencil lead thickness is

the United Nations building at 43d Street and the East River.

Q. What is the area type of contsruction that you see in the taller buildings along the East River, both north and south of the East River plant? A. Those buildings are housing developments, multi-family dwellings ranging from eight to 12 and 15 stories in height.

Q. Will you turn to plate 3 of exhibit 22 and will you

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identify the general area that is encompassed by this photograph? A. Well, this photograph shows the characteristics of Mid-Manhattan. The tall building in the center of the photograph with the spire is the Chrysler Building.

To the right one can see the United Nations Building, and then further to the right the three Stacks on our Waterside station.

Directly between the United Nations building and our plant you see the tall buildings of Tudor City.

Q. And this generally describes, does it not, the congestion of important buildings in that area, both residential and office? A. It does.

Q. Turn to plate 4. That relates to Waterside again, does it not? A. It does. It is a night shot photograph taken from across the East River, facing the West and shows the proximity of the United Nations buildings to our Waterside station.

Q. Turn to plate 5, will you give the approximate location of that? A. This is another night photograph taken along First Avenue facing south.

The United Nations is on the left, our Waterside

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plant and stacks are in the center of the picture.

Q. One of the three stacks seems to be smoking more than the other two.

Does that stack have any relationship to your specific testimony? A. Yes, it does.

Q. What is that? A. That is the so-called East stack of Waterside 2 and that is the smoke stack which takes the flue gases from boilers 71 and 72.

Q. Which are the ones which if these approvals are obtained would be converted to gas service? A. That is right.

Q. The last photograph, I believe is the plate 6 and I wonder what significance that has.

It shows Waterside again, of course, but what would you point out with respect to that scene? A. I point out again this part of Manhattan is congested and that the building is upward and Waterside, if it is to expand at all, has to expand upward if at all possible.

Q. Are there other advantages to the community from this Transco proposal on which you have not attempted to place a dollar value? A. Yes, definitely there are other advantages to

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New York City from Transco's proposal in this docket and which I have not attempted a dollar value.

For example, the reliability of both gas and electric service will be improved.

The program Transcontinental is proposing here will essentially complete the looping of their lines from their supply areas in Louisiana and Texas to the New York market.

As Transcontinental's witness have pointed out in this docket and previous dockets, the completion of the looping program will greatly improve New York's assurance of continued uninterrupted supply.

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Q. What is your opinion as to the importance of the third river crossing of the Hudson River near Seventy-

third Street to the community which you and the other gas companies serve? A. The third crossing of the Hudson River near Seventy-Third Street which Transcontinental has agreed to install will provide enough additional capacity to carry the total load of the New York companies under emergency conditions with one pipe line crossing the Hudson River out of service. Our management regards this additional crossing as a very important safety and reliability factor to its customers, and the general public and the metropolitan area in New York quite aside from its economic advantages.

Q. Are there other advantages in your opinion? A. As can be seen from the map on plate 1, Con-Edison will connect the new source of supply with the backbone of the New York facilities by constructing a new pressure gas main across Manhattan through the Ravenwood Tunnel under the East River. Thus the new supply will be made directly accessible to the two Brooklyn companies and Long Island, where it can be used to meet their growing loads on an economic basis. Where the main crosses Manhattan Con-Edison will tap it to reinforce the gas distribution system and to supply the Waterside and East River stations. The introduction of gas at Waterside and East River stations will

give them another independent source of fuel which will not be subject to interruption due to the weather or other factors which have in the past caused interruptions to our fuel.

What is Con Edison's specific interest in Transco's current application? A. It is a necessary first step in the company's program outlined above. The capacity provided by the X-20 service is required to meet next winter's gas load. It will reduce emissions at Waterside to an acceptable

level and will produce half the capital savings associated with this program. In addition, operating expenses will be reduced $1,820,000 per year and the savings of $610,000 per year from the storage service will also be realized.

Q. Mr. Manz, when you went into this program, did you and the management of your company consider the objections which undoubtedly would be raised from the purchase of large amounts of gas for boiler fuel? A. I realize that the purchase of large amounts of gas for use as fuel in electric generating plants often raises objections, and we have not gone into our program of the direct purchase of gas in the Southwest for this purpose without weighing such possible objections against the advantages which will be realized by our gas, electric and steam customers and by the general public in the New York City Metropolitan area. Our conclusion, for the reasons stated, is that the benefits to the broad public interest

in our peculiar situation far outweight such merits as there may be in the view of such objectors.

Q. In this process of weighing, have you considered the effect of your plans on the interests of the coal producers and workers? A. Yes, we have. I am informed that the coal interests have participated in most of these proceedings to show the hardships involved in the loss of their established coal market to natural gas. The use of gas as a fuel for smoke control purposes will not of itself be the cause of a loss of market to the coal companies. If Transco is not authorized to transport our Texas purchased gas, Con Edison will be under great pressure to convert the East River and Waterside plants to oil operation as an alternate means of smoke control. In that event, our coal suppliers would lose the market represented by our proposed conversion to gas in these plants. It would, therefore, seem

immaterial to them whether this loss results from the substitution of gas or oil.

Q. Have you considered the conservation viewpoint which at times has questioned the use of natural gas for boiler fuel? A. Yes, we recognize that another opposition, which has been called the conservationist viewpoint, wishes to preserve all natural gas for the benefit of the ultimate small gas user. I read with interest Commissioner Connole's speech

reported in Public Utilities Reports on this subject. Naturally, I have given careful study to his exposition for which I have great respect.

However, the situation that we have at our Waterside and East River plants, as I have already pointed out, is such that the only practical method of satisfactorily solving the stack discharge problem is by substituting gas or oil in place of coal as a fuel.

The convenient portability of oil, which goes with its liguid form gives it an especial value as a fuel for many uses and it is difficult to see, from a conservation standpoint, how there is anything to be gained from denying the use of gas only to force the use of oil as a result. This seems especially to be emphasized in view of the fact that statistics indicate that the proved reserves of oil in this country are relatively less abundant than gas.

It must be borne in mind that we have in New York the densest population in the world. We also have adjacent to our Waterside Plant the international territory of the United Nations. I submit that the need for avoidance of smoke pollution in such an area is unique, that under the circumstances the conservation of a wholesome atmosphere should not be abandoned in favor of a fuel conservation policy which without broader implementation than is possible under present law may prove to be illusory.

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The relief which we seek to provide from the burden of atmospheric pollution is so clearly in the public interest that it ought not to be denied for the sake of some future public benefit which today can hardly be soundly evaluated.

For these reasons, it is my opinion that the broad public interest is better served by the use of this gas in the manner proposed in our plants rather than by its retention in the ground for the theoretical exclusive use of the domestic gas customers of some period in the future when heat and other forms of energy may well be provided in some better manner.

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Mr. Jerome McGrath: Taking the Waterside plant first, the natural gas used at that plant plus oil would replace coal altogether, is that correct?

The Witness: Waterside consists—Waterside station is two city blocks, and there is Waterside 1 and Waterside 2, and Waterside 2 is the older station where those topping units are. Waterside 1 has been modernized more recently, and the boilers that serve Waterside 1 have adequate precipitation and fly ash removal equipment, so that the stack emissions in Waterside 1 are meeting the air pollution Commission's requirements.

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So that there would be no coal replaced in Waterside 1. Waterside 2, the chief offenders are the boilers 70 and 71, or 71 and 72 that were the last of eight boilers installed in Waterside 2 from the period 1937 on through 1942, I have forgotten the exact year. And those two boilers are the ones we want to fix up first.

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Mr. Jerome McGrath: As I understand your testimony, and I wish you would correct me if I am wrong, the 50,000 Mcf a day that you are seeking here under your transportation service and under the X-20 rate from Transcontinental would be used to convert the two boilers at Waterside numbers 71 and 72, and the boilers at East River, whatever their numbers may be—

The Witness: One to nine.

Mr. Jerome McGrath: One to nine—as an initial step in your, smoke abatement program, am I correct or incorrect in that?

The Witness: You are incorrect: We would plan to convert Waterside first, and the 50 Mmcf per day would convert all eight boilers in Waterside to gas firing.

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Mr. Jerome McGrath: So that as far as the present proceedings are concerned, the Waterside plant is the only one that you are concerned with in getting gas, in other words, as far as the instant proceedings are concerned?

The Witness: Except that we are putting forth our whole program here, knowing that sooner or later we will have to take care of East River.

Mr. Jerome McGrath: But so far as seeking authorization from the Federal Power Commission is concerned, and the transportation of 50,000 Mcf per day, you are not including any gas in there for the East River conversion, is that correct?

The Witness: That is right.

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Atherton Thomas

was called as a witness and, after being first duly sworn, was examined and testified as follows:

Direct Examination

By Mr. LeBoeuf:

Q. Mr. Thomas, will you give your name and address? A. My name is Atherton Thomas. My address is 4 Irving Place, New York 3, N. Y.

Q. What is your position with Consolidated Edison Company? A. I am Assistant to the Vice President, and have been in the employ of the company since 1924.

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Q. And to what does your testimony today relate? A. My testimony relates to Exhibit No. 22 for identification entitled "Natural Gas Requirements of Consolidated Edison Company of New York, Inc."

The map, photographs and tables supporting and illustrating the testimony of Mr. Manz and myself are gathered together in the exhibit as a matter of convenience. I am responsible for Exhibit 22 which was prepared under my supervision and direction.

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Q. Will you please describe plate No. 7? A. Plate 7 is a simplified diagram of the Waterside Steam system. It illustrates two points discussed by Mr. Manz, first, steam generated in the individual boilers passes through high pressure turbines into a 200 Psi common header or piping system, that is, 200 pounds per square inch pressure, where

part of it goes into the district steam distribution system, and part of it is used to generate electricity in the old low pressure turbine.

Second the products of combustion pass from boiler through the precipitators or dust collectors where most of the solid matter is removed from the smoke which then goes up the stacks in the atmosphere.

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The dashed dotted line running up and down the middle of the plants is simply to indicate that physically stack No. 3 is offset from stacks 1 and 2, that is, the three stacks are not located in a straight line.

As brought out by Mr. Manz, the lack of space and compactness of construction prohibit expansion in any but a vertical direction.

Q. Will you turn to and describe plate 8? A. 8 also relates to Waterside.

It shows in some what more detail how the hot gases leaving the boiler furnace first pass through primary and secondary mechanical dust collectors where the larger particles settle out.

After that electrostatic precipitators attract the smaller particles, thus preventing them from reaching the atmosphere through the stacks.

The diagram shows how the dust collecting system on Waterside stacks numbered one and two actually work.

These precipitators remove 97.5 per cent by weight of fly ash in stack 1 and 94 per cent in stack No. 2.

You will notice how much less effective the particle removal is on boilers 71 and 72, where only 89 and one-half per cent of the fly ash is taken out of the flue gases.

That you will notice in plate 9.

In contrast, over 98 per cent is removed from the flue gases in the other two boilers connected to the

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same stack.

The necessity to reduce the emission from boilers 71 and 72 at Waterside is the reason the company proposes to fire these boilers with gas continuously.

While this explanation refers only to Waterside, the principal is the same at East River, although the physical arrangement is somewhat different and more complicated.

Q. Will you please explain Plate 9? A. Plate 9 shows the quantity of the fly ash that escapes through the precipitation and into the atmosphere from each stack at Waterside and at East River. Under present conditions when only coal is burned at Waterside, 1121 pounds of fly ash reach the air in an average hour.

Of this 269 pounds are unburned carbon.

When gas is substituted for coal on boilers 71 and 72 as we propose all the year around, the total fly ash reaching the air will be reduced by fifty per cent, and the unburned carbon by 81 per cent.

During most of 1959 it will be possible to fire all the boilers exhausting into stacks No. 1 and 2 with gas, thereby reducing the fly ash by 85 per cent, and the unburned carbon by 97 per cent to a mere 8 pounds per hours.

Similarly, when gas burning is extended to East River, total stack emission at that station will be reduced by 58 per cent, and unburned carbon by 84 per cent.

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Q. Would you return to plate 13 and discuss the plate a little more? A. Yes, sir.

Plate 13 shows how the company proposes to supply the peak day gas load shown on plate 12.

Lines 1 through 6 show Consolidated Edison's present firm supply.

Starting next winter, the company will have long term contracts for a hundred per cent load factor gas amounting to 169.3 Mmcf per day, of which Transco supplies 143.7 Mmcf, and Tennessee 25.6 Mmcf.

That is on lines 1 and 2.

The Company's Hunts Point and Astoria converted oil gas plants plus the liquid propane air installation

at Pelham, have a rated capacity of 123.3 Mmcf in 1958-1959.

When Hunts Point is retired in 1959, this daily capacity will become 70.3 Mmcf.

That data is on line 3.

Line 7 shows our peak day requirements at the design temperature of zero degrees Farenheit.

The last three columns of figures in line 9 show that the company must find new supplies of at least 54.4 Mmcf per day to carry the load next winter, and at least 155.4 Mmcf per day by the winter of 1960-1961.

The remainder of the table shows how the Company proposes to arrange for the new supplies.

First, lines 10, 11 and 12 show the new supplies we have already contracted for.

Lines 10 and 11 are the 30 Mmcf per day of storage service, and the 50 Mmcf of X-20 service for which Transco is asking approval in this docket, and these are the same items that Mr. McGrath asked Mr. Manz about.

Line 12 is the additional 35 Mmcf per day of X-20 service which Transco has already agreed to supply us next year.

Lines 15 and 16 show the additional purchases the company is now negotiating for namely 30 Mmcf per day of storage from Tennessee and 35 Mmcf per day of X-20 service from Transco.

Q. What is the firm gas supply in the winter of 1957-

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1958? A. The firm gas supply this winter amounts to 201.3 Mmcf per day, plus a high Btu oil peak shaving capacity of 121.3 Mmcf.

The total of 322.6 Mmcf provides a reserve of 27.6 Mmcf per day over the load exposure of 295 Mmcf.

The company considers this an adequate reserve.

The 201.3 Mmcf of gas supply comprises 169.3 Mmcf of long-term firm gas, of which Transcontinental supplies 143.7 Mmcf, and Tennessee 25.6 Mmcf.

The other 32 Mmcf is temporarily from Transcontinental, and will be available only this winter.

Replacement of the temporary supply, plus the anticipated load growth this year, results in the need to acquire a minimum new supply of 54.5 Mmcf per day to meet the gas load exposure in the winter of 1958-1959.

This load contemplates the year around use of 25 Mmcf for establishing stack control at Waterside.

Q. What are the company's plans for the winter of 1958-1959? A. The company plans to obtain a new supply for next winter by purchasing fifty Mmcf of X-20 service which Transcontinental proposes to sell it in this proceeding.

This purchase will at the same time remedy the worst stack emissions at Waterside which, Mr. Manz has explained,

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we must do to comply with the public interest in a cleaner New York.

Q. Has the contract for the 50 MMCF X-20 service been signed? A. Yes, it has been signed with Transcontinental and appears at section 1 of exhibit 18.

Under it, Transcontinental will supply from their own reserves resale gas which will provide the winter needs of the gas system.

The same contracts also provide transportation for the

gas the company has bought in Texas, which can be used only for fuel in the electric and steam stations.

The restriction as to end use was insisted on by the producers selling the gas, and Con Edison wanted a firm supply of gas for use in smoke control, which it cannot be assured of with gas bought under Transco's CD rate schedule.

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Q. Will the 180 Mmcf day gas supply program you have

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outlined, when and if completed and duly approved, meet Con Edison's objectives as described by Mr. Manz? A. Yes, sir. The gas system load requirement will then be taken care of and the company will have about the same margin of reserve in the winter of 1960-1961 as it has this winter.

Enough firm gas will be available to meet the air pollution problems at Waterside and East River, and the Hunts Point oil-gas plant can be retired.

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Q. What is the importance of the X-20 service to Con Edison's program? A. It is the essential component of Con Edison's supply program. Three separate but related agreements have been made.

The central agreement, Section 1, Exhibit 18, is a contract for 50 MMcf of X-20 service to start this fall when Transcontinental's looping program proposed in this docket is completed. A letter of intent executed by both Transcontinental and Con Edison provides for another 35 MMcf per day of X-20 service in the fall of 1959.

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Q. What does the X-20 contract provide as to Transco's responsibility to furnish gas for resale?

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A. The X-20 contract provides that Transco will be ready at Con Edison's request to provide the daily contract quantity of CD gas on 60 days in any calendar year. The company's engineering studies show, and we have so advised Transcontinental, that over the life of the contract, Transcontinental would be expected to supply under this provision about 5 percent of the total gas delivered. As shown on Plate 18, the use in any one winter can be expected to vary widely depending on the weather.

However, over the life of the contract, it is estimated that the average use will be in the order of 5 percent. This gas, that is, the gas supplied by Transco's own reserves, will cost Con Edison 34.23 cents per Mcf. This is the rate Con Edison is now paying Transco for long-term CD-3 gas taken at a 100 percent annual load factor. It is made up of a commodity charge of 25 cents, and a monthly demand charge of $2.806 per Mcf, which equals the total cost of 34.23 cents at a 100 percent load factor.

The firm transportation charge which Transco makes to Con Edison comprises a commodity charge of 14.15 cents per Mcf, and the same monthly demand charge as in the CD rate, $2.806 per Mcf, which equals a total price of 23.38 cents at a 100 percent load factor.

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Make-up transportation capacity on an interruptible basis will cost 19.5 cents per Mcf.

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Q. What is the fact as to the mid-Manhattan concentration of electric and steam loads on Con Edison's system? A. The mid-Manhattan area has the greatest concentration of electric and steam loads on our system. The Waterside and East River stations are located in the heart of this area, and are major sources of energy for our system. Together these plants produce 13,211,000,000 pounds of steam, or 65 percent of the company's total steam send-out in 1957 6,127,000,000 kilowatt hours, or 39 percent of the company's net electric generation.

In so doing, they burned 3,297,000 tons of coal and 1,454 MMcf of gas in 1957. A small amount of oil was also used for test purposes. That is, over 98 percent of the total energy input to these plants came from coal.

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Q. If you obtain the 120 MMcf per day which the company proposes to use for smoke control, how much coal will it replace? A. 120 MMef per day will replace 1,611,000 tons of coal annually, or forty-nine per cent of the present coal used at the Waterside and East River station.

Mr. Jerome McGrath: What was that again?

The Witness: 48 per cent.

By Mr. LeBoeuf:

Q. Over and above the physical necessity of having adequate supply to meet the gas loads and to furnish accurate method of reducing objectionable stack emission, will the company realize substantial financial savings from the service requested in this proceeding? A. Yes, sir, very substantial.

Q. Please explain. A. On plates 19 through 23 we show the monetary savings which will result from the program as estimated by our cost system engineering department.

I have reviewed the computations and agree with the methods used and with the results.

Plate 19 shows the capital savings from the program would amount to $17,650,000 even after providing seven and a quarter million dollars for the installation of standby oil burning equipment at East River.

Plate No. 20 shows that $19,650,000 of the total savings

on plate 19 are associated with the first 50 MMcf per day of X-twenty service, which Transcontinental is asking approval for in this docket.

This plate 20 shows that it would cost $12 million to rebuild No. 71 and No. 72 boilers at Water side. Against this it would only cost $1,850,000 to convert eight boilers to gas burners.

The extension of the high pressure main down first Avenue is expected to cost $1 million, half of which is chargeable to reenforcement of the local gas distribution system, and the other half to the Waterside installation.

In the company's opinion, the X-20 gas will not only satisfy the need for clearing up stack conditions, but as these plates show, will also realize very substantial savings in capital.

The annual operating savings from the X-20 service are expected to amount to $4 million in 1959-60.

That is on plate 21.

In answer to one of the question which was raised by, I believe, Mr. Brunner, this $4 million saving is calculated assuming that the gas replaces coal. If it were calculated against burning oil at East River, it would be approximately another million dollars a year saving to our customers.

Mr. Brunner: I think I interpret your testimony cor-

rectly. In other words, if you utilize oil instead of coal, you would save $5 million instead of $4 million.

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The Witness: No, sir. If we utilized the gas—if we utilized oil as against coal, it would cost us another million dollars a year at East River. And our savings by utilizing gas would then be $5 million instead of $4 million dollars a year.

By Mr. LeBoeuf:

Please proceed. A. Plate 22 shows that $1,820,000 of this will be realized in 1958-1959, when the first 50 MMcf of X-20 service becomes available. That is the amount of X-20 service under consideration in this proceeding.

The Transcontinental storage service will produce additional annual savings of $610,000 per year. That is on plate 23.

Q. Please give your opinion as to the importance to Con Edison of the completion of Transcontinental's program. A. Well, these monetary savings alone, irrespective of the other advantages presented by Mr. Manz, constitute a very persuasive reason for approving Transcontinental's application in this docket.

But, as I have shown above, the company's natural gas system must have the new capacity contemplated in this program if we are to meet our customers load.

The cost of building a combination of oil gas plant and liquid propane air plant as an alternate way to provide the needed capacity is so great that residential gas heating would

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be priced out of the New York market in avery short time.

The need to maintain a healthy and efficient gas service must be added to the purely monetary savings described above.

Mr. Le Boeuf: That finishes the direct testimony of Mr. Thomas, Mr. Examiner.

Presiding Examiner: Do you have some questions, Mr. Brunner?

Mr. Brunner: Just one question.

Now, tell me, after what you have said here, how will the public and the customer companies and the consumers benefit if these projects go forward from your viewpoint?

And by these projects, I am thinking in terms of Transcontinental's project and the company project of Consolidated Edison, it may be self evident from the record, but I would like to hear it from you.

The Witness: From the point of view of Con Edison, we first have to have this capacity to meet our gas loads. Second, we have to do something to control this smoke pollution problem. And third, we have to get started on retiring these old gas plants.

All of those savings are going to mean better service to our customers and better reliability.

On top of that, we have these rather huge sums of money which are going to be saved. Part of them, the direct savings in fuel, of course, as you know, go to our customers in the

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automatic operation of our fuel cost.

The rest, under the close regulation which we have from the New York Public Service Commission, will either result in a reduction in rates to our customers eventually, or the postponement of a rate increase which we might otherwise have to make.

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Mr. Jerome McGrath: So that your gas cost for the gas that would be used in the boilers would be 42.63 cents per Mcf?

The Witness: For that portion alone.

Mr. Jerome McGrath: What is the average cost of coal in those plants per million Btu?

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The Witness: Well, the comparative figure is that the gas is approximately 41 cents a million Btu, and the cost of coal is about 42.6 cents a million Btu.

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Mr. Jerome McGrath: Is the 41-cent figure, which is lower than the 42.63 cents you mentioned earlier, arrived at because of the higher Btu, higher than 1,000 Btu?

The Witness: Yes, sir.

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Mr. Jerome McGrath: And when you say that the Waterside plant would use 25 MMcf per day, you are speaking of the peak day?

The Witness: I am speaking of the amount of gas which we want to reserve on a peak day for the 71 and 72 boilers.

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Leonard Greenburg

was called as a witness and, after being first duly sworn, was examined and testified as follows:

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Direct Examination

By Mr. Howley:

Q. Will you kindly state your name and address? A. My name is Leonard Greenburg. My address is 44 West 77th Street, New York City.

Q. Will you state what at the present time is your official position? A. Well at the present time I am Commissioner of the Department of Air Pollution Control of the City of New York. Originally I was appointed to this post in 1952 by the then mayor of New York City, and I have since been reappointed twice in accordance with the provisions of Chapter 47 of the New York City Charter, Section 1071 A, which sets forth the professional qualifications for this post and which I fulfill.

Q. Will you set forth, please, your education and the high points of your experience? A. Well, I am a graduate of the Columbia University School of Mines, Engineering and Chemistry, in 1915, with a degree of Civil Engineer, and subsequently I was a student at the Yale University Graduate School where I took a Ph. D. in Public Health; and subsequently in 1930 I took an M. D. at the Yale Medical School.

During the course of my professional life, I have engaged chiefly in public health activities of various kinds. I was in the United States Public Health Service for some 14 years. I

was Health Commisioner of the City of New Haven for a year and a half. I specialized, while in the Public Health Service, in occupational disease prevention and industrial hygiene. And later on, for 17 years, I was in charge of industrial hygiene for the State of New York, and then in 1952 I took this present position as Commissioner of Air Pollution Control.

Q. Are you, in addition to being a licensed physician, also a licensed engineer? A. Yes, I am a licensed engineer, professional engineer, in the State of New York. My license number is 17465. That was obtained in 1937. And I am a licensed physician in the State of New York, license number

24875; and a licensed physician in the State of Connecticut, 203172.

Q. Will you state your university affiliations? A. Well, I have had, over the past many years, many university affiliations. For approximately 15 to 20 years I was on the teaching staff at Yale, and I finally finished up there in about 1945 as clinical professor of public health. Since that time in New York City I have been on the teaching staff at Columbia, and now I am on the teaching staff at New York University, and I am Visiting Professor at the Einstein Medical College.

Q. Will you touch upon, Dr. Greenburg, the more important of your professional affiliations? A. Well I am a member of the Honorary Scientific Society

Sigma Xi, and the honorary public health society. I am a diplomate of the American Board of Preventive Medicine and Public Health, and a diplomate of the American Board on Occupational Medicine; and a member of the American Medical Association. I have been a member of the American Society of, what was originally called, Heating and Ventilating Engineers for about, I think about, 25 or 30 years—no less than 25 anyway. I have been a Fellow of the American Public Health Association for many years, and I have been on the Board of Directors of the American Industrial Hygiene Association; on the Board of Directors of the National Society for the Prevention of Blindness.

And in addition to this, I have done some work and been on several committees for the World Health Organization, and at the present time I am a member of the New York State Board of Air Pollution Control which was recently set up by state statute.

Q. What is the general purpose of your appearance at this proceeding? A. Well, I appear before your Commis-

tion at the direction of the Mayor of the City of New York, the Board of Air Pollution Control with whom I have discussed this problem only last week, and the people of the City of New York, in order to urge approval of the request now before you of the Transcontinental Pipe Line Corporation for permission to transport certain amounts

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of natural gas for use within the City of New York for the generation of electric power and steam by the Consolidated Edison Company.

Now I appear before you and present this testimony solely and completely in the interest of the control of air pollution in our city, and the urgent need for the reduction of air pollution by the Consolidated Edison Company. I have no other reason for being before your board.

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Q. What are the broad problems of air pollution? A. Well, sir, throughout the United States the problem of Community air pollution has been receiving increasing attention during the last ten years or more. Everyone, practically everyone, has heard of the smog problem of Los Angeles, but the fact is that Los Angeles is not by any means the lone sufferer from air pollution in our country. There are many cities which suffer from severe air pollution.

The Congress of the United States recognized the importance of this problem, and the 84th Congress, in July, 1955, passed a law authorizing the United States Public Health Service to engage in air pollution control activities, and authorized the service to spend the sum of not exceeding $5 million per year in pursuit of these activities. This is set forth in Public Law 159 of the 84th Congress.

Q. What is the effect of air pollution on your particular

area, that is, in the City of New York? A. I would like to read for you another statement here, sir:

As further evidence of the importance of air pollution control to the New York City metrpolitan area, I refer you to a very recent report dated February, 1958, just last month, published by the Interstate Sanitation Commission, entitled, "Smoke and Air Pollution—New York and New Jersey".

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in which the following statement is set forth:

> "Pollution is an irritating nuisance for millions of inhabitants of the area and, in addition, brings about numerous more harmful effects.
>
> "Economic losses caused by air pollution in the New York-New Jersey metropolitan area are numerous. Pollution results in damage to buildings and structures, painting, finishes, textiles, vehicles, clothing, and many other items. Cleaning costs in the area are increased to a major extent by air pollution and its effects.
>
> "Health may be adversely affected, especially in persons liable to asthma and certain lung impairments. At lease a suspicion exists that air pollution may be a contributor to the increase in lung cancer and some forms of heart disease.
>
> "Aircraft flights into and out of the New York-New Jersey metropolitan area are hampered by poor visibility brought about by air pollution. Pollution thus increases potential hazards at some of the world's busiest and largest airports."

This report from which I have just quoted was a report prepared by the Interstate Sanitation Commission, and I regret that I did not bring copies with me. However, I can send them to the Commission. But this is a very recent

and pretty intensive study of the problem in the New York-New Jersey area, and we agree with the findings of this report quite substantially.

Q. Becoming more specific, Doctor, what is the relationship of the problem of air pollution to the proceeding now being heard? A. Well, I think it should be borne in mind that the Consolidated Edison Company is essentially the power and steam source for our city. In all, the company operates ten plants and provides more than 15 billion kilowatt hours of electrical energy and 20 billion pounds of steam for the use of the citizens of New York each year.

In general, we feel that the company has been moving on a progressive campaign of improvement in plant facilities and in the control of pollution from these plants.

But there are two plants which do give us much concern.

Q. Which is the first of these two plants? A. The first of these is the Waterside plant situated at 40th Street and First Avenue in the Borough of Manhattan.

In general, most of the boilers at this plant are now removing approximately 97 to 98 per cent of the flyash produced by the combustion of coal before the discharge of stack gases. There are, however, two boilers, Number 71 and 72, which discharge their gases through a stack, known as the East Stack, which give us considerable concern, and

I would like to talk about those for a moment.

Boilers 71 and 72 at the Waterside Station consume approximately 1,632,000 pounds of coal each day. This is in the form of pulverized coal. These boilers contribute 642 pounds of flyash to the stack gases each hour, an amount equivalent to about 15,000 pounds a day.

In addition to this tremendous contribution of flyash, these two boilers, 71 and 72, about which I am talking at

the moment, release approximately 42,000 pounds of sulphur dioxide gas to the city's atmosphere.

Now, this is the crux of the problem so far as an air pollution man sees it with reference to the Waterside plant, and, in particular, Stacks 71 and 72.

Q. What about the location of the Waterside plant and the surrounding buildings? A. Well, this Waterside plant is situated in one of the most densely built-up areas of New York City, and probably of the world, I would think. In this area, there are located many of the City's finest office buildings, the United Nations' buildings, Grand Central Terminal, many of our important hotels, two of the very largest newspaper printing and publishing establishments in the United States, the Daily News and The Daily Mirror, and many foreign consulates and legations.

This area is now undergoing further very rapid development,

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and, although it is approximately only a half square mile in area, it, nevertheless, contains more than 66 buildings over 18 storeys in height.

In addition, there are many large and small apartment houses located in the immediate vicinity of this power plant.

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Q. Will you describe, Dr. Greenburg, what Exhibit 44 for identification purports to show? A. Well, this is a photostatic copy of Sections of the Manhattan Land Book published by the G. W. Bromley & Co., Inc., which we exhibit purely for the purpose of showing the location of the stacks of the Waterside plant with reference to the general buildings in the area and the nature of the build-up of the total area about which I referred to previously.

You will note that the Waterside plant is right along the river adjoining the Franklin Roosevelt Drive, on the right side of the plan, and the three stacks are numbered 1, 2 and 3. Then you will see, directly to the north, the United Nations' Headquarters, and the buildings in the whole area. You see the Grand Central Station on the left to the north, and the buildings in the whole area, particularly those which are outlined with heavy dash lines, which are the buildings, at the time the map was made and photostated, over 18 storeys or more in height.

This will serve to give you a more concrete picture of the layout.

For example, a couple of blocks north of the Consolidated

Edison plant, between Second and Third Avenue, you will notice the Daily News Building, and I believe a few blocks further north is the Daily Mirror, another one of our big newspapers.

The new Socony-Vacuum Building, you see, is on 42nd Street, between Third and Lexington Avenue.

Q. Why do you stress height, Doctor? A. I stress height because the stacks of the Consolidated Edison Company are high, in an effort to dissipate the discharges from the stacks, and the solid material, particularly, floats through the air at a high level before it comes down to street level, and gets in the windows of many of these tall buildings.

I think that the problems of air pollution are entirely different in a city where the buildings are low and widely dispersed than in a city like New York where the buildings are close together and the effluents from many stacks pollute the atmosphere.

Q. What is the second of the two plants that you made reference to before? A. Well, the other power plant which I would like to speak about is the East River plant.

(221)

This is located on 14th Street, right along Franklin Roosevelt Drive. Here, too, the boilers are equipped with flyash removal equipment, which removes from about 96 to 97

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per cent of the flyash produced, but approximately half of the boilers succeed in removing only 90 to 95 per cent.

In other words, there are some boilers there which are not doing an adequate job from our point of view, with the result that some 42,000 pounds of flyash are emitted each day to the air by this one station alone, and about 360,000 pounds of sulphur dioxide. And it is this that gives us our concern.

Q. Now, will you describe the neighborhood in which the East River plant is located? A. Well, as I pointed out before, this plant is located along the East River, south of the Waterside plant at about 14th Street. Immediately north are two very large low-cost public housing developments; namely, the Lillian Wald houses, containing 16 buildings, 14 storeys in height, and the 19 Jacob Riis Houses, mostly 14 storeys in height.

Immediately to the west of the East River plant are the large privately-owned middle-income houses known as Stuyvesant Town, and here there are 35 buildings more than 12 storeys in height; and immediately to the north of the Stuyvesant Town is a Peter Cooper Village comprising 21 buildings over 15 storeys in height.

Now, in all of these buildings together, there are some 14,800 families, and if you assume a rough average, which probably is not correct—but, as a rough average—

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it will give you an idea of the occupancy. You assume three people to an apartment, three people to a family,

and you come up with a figure of about 45,000 persons living in the vicinity of the East River plant.

Now, in addition to this, somewhat further north but nevertheless affected by the stack emissions are the buildings of the new Veterans Hospital and Bellevue Hospital and nurses' residence.

This Veterans Hospital is a tremendous edifice, and the Bellevue Hospital complex is probably the largest or one of the largest hospital complexes in the United States. This is a hospital, nurses' home, the City Mortuary, the New York University buildings, and the Rehabilitation Center of Dr. Rusk, and all of these buildings together constitute, without any question, one of the great hospital complexes of the world. And this is right in the area which is affected by the East River plant.

Q. Is the area that you have just been describing depicted in a map which has been prepared under your supervision? A. Yes, we had a map of this area also. Yes, this is the one.

Mr. Howley: Mr. Examiner, would you like a large copy of this?

Presiding Examiner: I would rather deal with the

small copy, please.

By Mr. Howley:

Q. Have you that map before you, Doctor? A. Yes, I have the map before me now.

Mr. Howley: May I have that marked for identification, Mr. Examiner?

Presiding Examiner: This is a photograph of a map bearing at the upper right-hand corner the legend, "The Source of Maps—Manhattan Land Book, City of New York—G. W. Bromley & Co., Inc., New York," and a

further legend which begins "Part of Section 3—Plate 50", et cetera.

In the lower left-hand corner there is a legend saying, "Building Outlined are Ten Storeys or Over—2/7/58".

This document will be marked for identification Exhibit 45.

(The map referred to was marked for identification as Exhibit No. 45.)

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By Mr. Howley:

Q. Would you, Doctor, please describe Exhibit 45 for Identification? A. Well this, again, is a photostat of Manhattan Landbook made by the G. W. Bromley Company, Inc., the original map, and shows the location of the East River plant and its four stacks running alongside of the Franklin Roosevelt Drive, and the East River, and it shows outlined in dotted lines, dash lines, the buildings which are 10 stories in height or more.

I want to make it clear that these dash lines were added by us and not by the Bromley Company.

Now along the river you will see on the right side of the map the Lillian Wald Houses, the Jacob Riis Houses, and then you come to the Consolidated Edison station. And going a little further north you see a building of the Department of Plants and Structures of the City of New York, and on the left Stuyvesant Town with its many buildings. And a little further north at Stuyvesant Town you will see the Veterans Hospital outline, the Bellevue Nurses Home and School, and then the remainder of the Bellevue layout is still north but not shown on the map here. I think there is really nothing more to add. The map, sir, is quite self explanatory.

Q. Coming back for a moment, Doctor, to the Waterside

plant what, if you know, is the reaction of the nearby residents and business people?

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The Witness: For many years our department and its predecessor departments have received bitter complaints from tenants and office workers in the vicinity of these plants concerning dust, flyash, soot and sulphurous odors. Some members of your Commission may even recall the seriousness of this situation at the time the 41-story United Nations headquarters building was under construction in 1950. This building is less than four blocks north of the Waterside plant. Mr. Trygve Lie, then Secretary General of the United Nations, characterized the gas and smog nuisance so bad as to create, and I am quoting now from a letter written by Mr. Trygve Lie, "a serious and potentially dangerous condition".

Recently Mayor Wagner received a petition from 1,855 tenants of the Tudor City buildings, a large group of apartment houses situated north of the Waterside plant, in which they complained about stack emissions from the Waterside plant. Concerning this problem, the local publication, "Tudor City View" published a letter and petition on page 8 of the November, 1957, issue, a portion of which reads as follows:—

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The Witness: Well, may I just summarize it in a couple of words?

We sit in the office there in New York, and we naturally have many complaints that come in by telephone and some by

telegraph, and many by mail. And the Mayor's office received this petition from the Tudor City people, and it was forwarded over to my office in due time, and we made investigations up at Tudor City, and we were convinced as a result of our investigations on many occasions that this area was being polluted by flyash from the Consolidated Edison plant.

Irrespective of what anyone else said or did not say, this was our conclusion. So that we believe that there is no question about it, that the people in Tudor City, whoever they were or whoever made any complaints, had very reasonable and just cause for complaint.

By Mr. Howley:

Q. Very well, Doctor.

What have you to say with respect to the health implication of emissions, stack emissions such as we are talking about? A. Well, in a health field in air pollution, there is a lot we still have to learn. There is no question about this. Many of us are trying to make investigations to learn more about the health aspects of the problem. But some information is emerging, and aside from the nuisance aspects which have been verified on numerous occasions by our staff, we believe that the health implications inherent in the continued exposure to mixtures of soot, flyash and sulphur dioxide gas which are continually emitted by these power plants, is something to be regarded with suspicion. There is mounting evidence from many

sources that exposure to a mixture of such dust and sulphur dioxide can cause marked irritation of the respiratory tract, and obviously, an official agency such as ours can not be blind to the health implications which

are inherent in this situation. And I do not think we are blind to it, and we are trying our best to keep abreast of developments in this field and to run down any leads we can which may be of significance.

Q. What action has your department taken to attempt to abate this nuisance? A. Well, this department, our department, the Department of Air Pollution Control, since it was first formed as an independent agency in '52, has brought continuous pressure on the Consolidated Edison Company in the courts and through official hearings to have the company take steps to reduce the stack emissions at its generating stations. In 1953, a long-range program of considerable magnitude was formulated and agreed upon, whereby the Consolidated Edison Company would remodel its plants so as to provide the most modern mechanical and electrical precipitators for the removal of flyash from its stack gases. The cost of this program was at that time estimated to be approximately $44,000,000.

Q. What then has Consolidated Edison done, what steps has the company taken, in an attempt to meet this problem? A. Well, since January of '53 the company spent approximately $38,000,000 under this program, and in general we

would say that the company is aware of its duty and responsibility for air pollution control.

Nevertheless, the expenditure of these funds will not produce an adequate reduction of the emissions from boilers 71 and 72 at Waterside, nor the emissions from the boilers at the East River plant, previously referred to as embracing not only the particulate matter such as flyash, but the huge tonnages of sulphur dioxide which are emitted as a result of the combustion processes.

The Consolidated Edison Company has expended approximately $3,600,000 for flyash control of the Waterside

plant, but in spite of these substantial expenditures, the easterly stack at Waterside, which serves boilers 71 and 72, continues, as pointed out earlier, to emit an excessive amount of soot, smoke, flyash and sulphur dioxide. Our engineers advise us that this is not primarily due to the air pollution control equipment, but is due to combustion conditions inherent in these two boilers and that short of replacing them with entirely new boilers at a cost of approximately $12,000,000 and the expenditure of about four years' time, during which they would have to be taken out of service at least a good part of the time, there appears to be no other practical solution for the control of these boilers than the conversion of them to the use of natural gas.

The facts herein presented compel us to arrive at the

above cited conclusion and, in view of our desire that this problem be resolved and that these boilers be brought under control in as short a time as possible, we urge your Commission to grant to the Transcontinental Gas Pipe Line Corporation permission to provide the necessary transmission facilities to the Consolidated Edison Company for the delivery of this gas at the Waterside and East River stations.

Q. Now if natural gas were used at the Waterside and East River stations, what in your opinion would the effect be upon air pollution? A. Well, our calculations indicate that if boilers 71 and 72 were to be fired with natural gas, while the remaining eight boilers at Waterside remain on coal, as at present, the flyash emission to the air from this station would be reduced approximately 60 per cent to some 11,500 pounds of flyash, and the sulphur dioxide gas would be reduced some 22 per cent to 280,000 pounds per day.

Carrying these calculations further, if eight of the boilers at Waterside, including 71 and 72, were to be placed on gas and only two boilers were to remain on coal, the flyash emission would be reduced to approximately one-sixth of its present value and, similarly, the sulphur-dioxide emission would be reduced to one-half of its present value. It is obvious, therefore, that in order to achieve the maximum reduction in objectionable emissions from this power plant, situated in

the heart of the most intensively developed residential and commercial area of Manhattan, it is necessary to reduce the consumption of coal to its practical minimum.

While all of the foregoing calculations have been made with reference to the Waterside station, nevertheless they apply with equal force and substantially the same numerical results to the East River plant.

Q. How, Doctor, do you determine the quality of sootfall? A. We have at 26 locations throughout the city wherein they expose jars, ordinary glass jars of a standard size on the roof of the building, some four feet above the roof level, to catch the dust, the soot which falls at these locations. We have 26 such stations which we have been following now, subsantially that number—it varied between 22 and 26—for the last four or five years. Now the results of these samplings at the stations nearest the power plant with which we are concerned show that the sootfall in the neighborhood of these plants is higher than other locations in the city. As a matter of fact, the locations of the jars, as I remember it and now I am trusting to memory, is in a westerly direction from these two plants, where as a matter of fact it would be more logical to take samplings on the east side of the plant. But, of course, because of the location of the river we can not do this very

well. The prevailing wind in New York is, in general, westerly, northwest or southwest, and the sampling jars, to be

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more specifically applicable to Con Edison, should be directly to the east of the plant. So I would say that our sootfall findings in general indicate a lower degree of sootfall deposit with reference to Con Edison than really exists.

Our sootfall records indicate that in the vicinity of these two power plants the sootfall averages range between 92 and 94 tons per square mile per month and has a maximum range of 142 to 149 tons per square mile per month. And these figures compare with an average for most of the polluted boroughs of the city—I am striking out one very sparsely separated borough, namely, the Borough of Richmond, Staten Island—but these two figures which I have cited can be compared with the polluted boroughs average of 72 tons per square mile per month for the entire year. In other words, there is a difference there in sootfall on the average of approximately 20 tons per square mile per month between the jars located nearer Con Edison as compared with the average for the polluted boroughs of the city.

Q. From what you have set forth in your testimony, Dr. Greenburg, what conclusion have you arrived at? A. Well, it is our firm conviction that there is no other plan which can be proposed which would give the citizens of this city, of New York City, the relief they need from the nuisance of flyash and sootfall and from exceedingly large amounts of sulphur dioxide as will the conversion of as many

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boilers as possible at both Waterside and East River plants to natural gas. An important consideration, in our

thinking, is the fact that the conversion of boilers to natural gas can be made within a 12-month period, whereas the installation of new boilers, or of more improved flyash collecting equipment, if such equipment ever becomes available, would take a long period of time, something of the order of probably about four years.

Q. Has recognition of this problem been given by other agencies? A. I would say yes, sir. The Federal Power Commission and other governmental agencies are justly concerned with the nation's natural resources, and we must not overlook the fact that the very air we breathe is perhaps our most precious natural resource. This is not replaceable. We live in an envelope of air, and we can not afford to have our atmosphere become polluted to any great degree. The ingenuity of man can find and develop many sources of power and many sources of food, but there is no substitute for the atmosphere in which we live and work. Air pollution can not continue to remain an uncontrolled problem. Depletion of this natural resource must be avoided at all costs.

And may I add that with the great increases in population which are taking place in our country today, population increases at the rate of approximately three million persons a year, the

increase in urbanization which is taking place, the increase in the consumption of electric power—I have forgotten exactly what the average figure is, I think electric power has increased some 43 or 45 per cent in the last four or five years—I think under the conditions we have to realize that with these factors changing and the increase in industrialization we must be exceedingly careful or more and more cities of our country will overstep the bounds of reasonable limits of air pollution, and then when meteorological conditions turn against us on some

occasions, as they have in Los Angeles, we are going to be in serious trouble.

I might also mention that when this happened in the City of London, England, 4,000 people died in a period of about two weeks. This can happen other places, and this is something which requires long-range planning, and it is in terms of this which I, as Commissioner of Air Pollution of the City of New York, am now thinking and trying to transmit to your Commission.

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Q. Do you have any final comment by way of summary? A. We have considered this problem at great length, we live with it each day, and a good part of the night, and have for a long time. And as a result, we are firmly convinced that the health and comfort of the citizens of this city, including not only those in the immediate vicinity of these power plants, but those further away as well, requires the consent of your Commission to the transportation of gas for use in these power plants.

If the Federal Power Commission wishes to aid the people of the city of New York, and at the same time carry out the expressed intent of Congress in the reduction of air pollution, the approval of the use of gas as requested in the proceedings being heard here is one of the most significant ways in which the Commission can make a constructive contribution to the welfare of the people of New York City.

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Raymond H. Crowe

Q. Now what facilities would not be necessary insofar as certification is concerned if the Commission failed to approve the transportation of Consolidated Edison Company's gas? A. It would not be necessary to construct

the 7640 horse power station No. 35. It would not be necessary to construct the 8800 horse power station at Station 37. It would not be necessary to construct the 7640 horse power at Station 39.

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We would be able to eliminate the main line piping at those three proposed new stations, and also we would not build the dwellings at those stations.

Mr. Le Boeuf: Couldn't hear the latter part.

The Witness: We would not build the dwellings, the housing facilities for the personnel that might be employed at those three stations.

We would also be able to not construct—it would not be necessary to construct the additional 2500 horse power unit at our present Station 14; the 2500 horse power additional unit at our Compressor Station 15; the 2500 horse power additional unit at our Station 9; and the 2500 horse power additional unit at our Station 13—Station 3, correction.

It would also not be necessary to construct 22.51 miles of 30 inch loop pipe line between Stations 4 and 5. It would not be necessary to construct 34.53 miles of 30-inch pipe line between our Stations 3 and 4.

We would not have to construct four miles of ten-inch lateral at the Normanna Field; nor would we be required to construct the meter station at the Normanna Field.

It would not be necessary to construct 22 miles of ten-inch line into the Sejita Field along with the meter station at the Sejita Field.

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The cost of the facilities that would not be constructed if we did not do it for Con Ed amounts to $18,420,376

direct cost, with overhead and contingencies amounting to $1,979,624, making a total of $20,400,000.

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By Mr. Brunner:

Q. Mr. Crowe, your location of facilities in this particular proceeding, having to do with Transco's expanded project, depended; did it not, on your prior location of facilities in G-12059? A. To some extent, yes, sir.

Q. And what do you mean by that? A. Well, when I have to lay a loop line I have to lay it alongside of the line that was already there.

Q. Well, if you took out the facilities that you say could be taken out or would have to be taken out or not be put in, rather, in case the Commission failed to certificate certain facilities that you have just enumerated, would that mean a reallocation of those facilities that would be necessary both in G-12059 and the particular proceedings here, the 13590? A. I am not quite sure I understand your question, Mr. Brunner, but essentially we have had a long-range program and we have had additional requirements to serve our customers to get a completely looped pipe line, and we have followed that out

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and we are at the point now in our construction program where the cheapest increments of capacity can be had by finishing out the loops, and when you have reached that point and you completely loop the pipe line and there is additional capacity necessary, it can be necessary then to add compression; so as you knock off any increment of capacity, the first thing we would attempt to do is—the logical thing to do from the cost standpoint is—to

drop out compression facilities rather than pipe line facilities.

Q. In other words, if you deleted the facilities in G-12059 which we have been discussing, there would have to be some rearrangement of compression on the line. Is that what you are saying to me, in this particular proceeding?

Mr. Miller: Excuse me. Do you mean to serve these volumes?

Mr. Brunner: Yes.

Mr. Miller: Transport them in the event these lines were left out?

Mr. Brunner: Yes.

The Witness: If I understand your question, if we were not required to serve Vepco and we have got a certain amount of capacity built in the loop and we use those loops for something else, we would have to refigure; probably not have to have some of the compression that we propose. Now which, I can't say.

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By Mr. Brunner:

Q. Is that equally true with regard to the facilities in relation to the transportation of gas for Con Ed? A. I would not like to say that it is for Con Ed. I would say for a particular increment of 50 million, whoever the 50 million. The first 50 million you take off, you take off compression.

Q. And that is what you would have to do in the event Transco was not certificated to transport gas for Consolidated Edison? A. I wouldn't say we would have to do that, but that would be our engineering decision, that that would be the proper thing to do.

Q. Now if neither one of them were allowed, what would the situation be, the same? A. Neither one of which?

Q. Neither transportation requested authorization was

allowed for Vepco of Consolidated Edison by the Commission. A. I still think we would want to put all the pipe line in that we have proposed to put in and less compression.

Now it may be possible that the actual figures would show that you might be able to leave out a half a mile or two miles of pipe line and have a whole section of pipe line looped except a half mile or two miles of pipe line. I don't know what the true figures would be. We would propose to lay that two miles

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of pipe line so you wouldn't have to send the contractor back at a later date to do a two-mile spread.

Q. Are you saying to me then that assuming the circumstances I just gave you with regard to Vepco and Con Ed transportation that you would have to take another look at the location of the facilities and probably do some redesigning? A. For only Vepco and Con Ed?

Q. Right. A. No. I think I have given you pretty well the figures; we would probably only leave off the compression that we have talked about and the loops.

You will notice I said they would not lay—if you did not do the 50 million for Con Ed, we would not lay 22.51 miles of 30-inch. Well, that is in the south end where the gas would come in for Con Ed. Obviously if the gas would not come in, we would not. But beyond Station 5, I think we would do exactly the same thing as proposed here as far as pipe line loops are concerned.

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Roger D. Stanwood

Q. On the basis of that determination that you make as to the competitive factor in purchasing gas, how do you go about purchasing gas in areas such as the offshore

area where the price is considerably higher than wha. you have been paying in other areas? A. Again, it is based considerably on what you can afford to pay for it. And that was one of the circumstances surrounding those particular contracts.

Q. When you say you take into account competitive factors, just what do you take into account? A. Well, I think one in the gas transportation business has to take into account the ultimate cost of gas at the market place: that is where the gas is competing with other fuels; it is not competing in the Eugene Island area.

As far as purchasing gas, though, which is my responsibility, obviously there is considerable competition for the acquisition of new reserves by all of the pipelines to support their given markets.

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Q. Is the competition for natural gas reserves in the Southwest area pretty keen today? A. It has been, for several years, very, very sharp competition among the buyers, yes.

Q. And in order to acquire new reserves, it is necessary for your company to compete against a number of other pipeline companies, that is correct, isn't it? A. That is correct.

Q. And it is becoming more difficult to find large blocks of gas such as that you purchased in the Eugene Island area unless you pay a pretty high price, is that right? A. I think others in my capacity have testified that in order to attract a large reserve it is necessary to have a very attractive price, not simply a going price. You have got to have a better mousetrap than the other fellow, so to speak.

Now, in relation to these offshore reserves, it has been recognized by the Conservation Department of Louisiana,

which has the proration responsibility on behalf of the Department of the Interior, that these are premium operations. In other words, by that I mean that these operators are permitted higher allowables than those operating wells onshore, both for oil and for gas, because of the excess, or extra, I won't say excessive, but extra costs that are involved surrounding their initial discovery, costs prior to discovery, and operating

costs during the production phase of these facilities.

Q. Did you attempt, Mr. Stanwood, to purchase additional gas in areas other than the offshore area? A. We have attempted on many occasions to afford our market customers a maximum volume of gas by which they could firm up their maximum peak day requirements. And the history of this company in the past four years, starting in G-2367, has all been directed toward that effort.

Until this year, however, when we—or the past year, rather—when we did increase our purchase price in Louisiana above a previous 16 cents price, we had been unable to attract to Transcontinental Pipe Line sufficient new contracts and reserves to supply our customers in the maximum quantities, as I understand it, that they were desirous of contracting for.

We had been able to offer them, you might say, minimum quantities of gas, and they were very patient with us in recognizing the competitive angles, to see if we couldn't develop additional volumes.

But I say, we only reached that point after we shifted gears in this price schedule and had a competitive price with which to offer the producers in the south Louisiana. South Louisiana itself is the fastest growing, most prolific gas producing area in the United States, and has been for several years. That is why you find all of the pipelines

seeking gas there. Even some of those that are proposing to go as far

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west as California are looking in south Louisiana for gas supply.

Q. That is because they can't get it elsewhere? A. Well, it would be nice if we could buy it in Washington, but there is no gas in Washington.

Q. I mean in the area that we are talking about now, the Southwest; I mean any other area. A. Well, I don't know how much of the history you want to get into in this thing, Mr. McGrath.

Q. What I am getting at, Mr. Stanwood, is that you were forced to go down into the Louisiana area and buy this gas, offshore area, because you couldn't find it anyplace else, is that right? A. We could have found some in other places which would have cost our customer companies more than our purchasing similar amounts in south Louisiana.

Q. Well, in order to acquire additional reserves of gas it is necessary, is it not, for a pipeline company such as Transcontinental to pay increasingly higher prices in the field; that is true, isn't it? A. There are certain geographic advantages to any given price, but they are rather limited. So generally there is being developed, in my opinion, in south Louisiana a system of area prices. And the 21.5 cents price which you find generally in these contracts to which I am testifying here is

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about the level of competition at the present time. There are going to be isolated instances geographically where gas will be able to be contracted for at lesser prices, as we have done in some instances today.

Also, there are going to be premium reserves such as Rayne and Krotz Springs and others that are going to command higher prices because of the location and volume of gas available for deliverability to the pipeline at a single source.

Q. I had intended by my question, Mr. Stanwood, to consider the South generally. On the whole, the trend and the cost of gas has been upward, as has been evident for several years that that has been the trend, that is true, isn't it? A. Oh, yes, because you have had a regulated sellers' market.

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Q. Mr. Stanwood, in answer to a question by Mr. McGrath, you made a statement which I think I got down fairly accurately. You said that in making purchases it was not enough for your company to offer the going price, you had to have a better mousetrap. Would you explain to me a little more fully what you meant by that? A. I think I was using the analogy in relation to large or premium packages of reserves. Any time a new pipeline system comes into being, it has to have a large anchor for its operation, and any time that you are seeking quantities of gas in the magnitude as we have been in the past year or so, in the neighborhood of 200 million or so roughly, you can't do it in knits and knats, you have to have some fairly respectable reserves under contract.

As has been the case well established before Transcontinental's participation, other pipelines have borne out this historical experience, namely, in the Erath, in the Rayne, in the Krotz Springs, and in the Bateman Lake Fields, and several other places in Louisiana where large sources of reserves are available.

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Now, in the case of the offshore gas, in this docket, since that is the highest single price that is under discussion, it is also the largest dedication which Transcontinental has had available to it since I have been affiliated with the company. There is dedicated to us under those contracts approximately 122,000 acres of leases offshore in Louisiana, which by comparison is approximately 20 percent more than was dedicated to Tennessee in the CATC contract.

So I feel that it is appropriate for our company in participating in this large prolific area of potential reserves to obtain its shafe of the offshore gas as well as its share of the on-shore gas.

Q. Well, I am still not entirely certain that I understand what you meant. Would it be correct to interpret your statement as meaning that when you are attempting to purchase what you consider a desirable package you have to offer something more than the last similar purchase of a similar package? A. That has been the experience. In this particular instance, 22 cents was the maximum price that Transcontinental was willing to offer even for this large dedication and it was conditioned upon getting the entire dedication. It also was the minimum price that the producers were willing to accept for the sale of this gas.

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Harry L. Parlette

Q. I believe at one time the Long Island Lighting Company had in mind a project, if you want to call it that, whereby it was going to buy some gas in the field and have Transco transport it, is that correct? A. That is correct.

As a matter of fact, those negotiations are currently going on, but at this time I don't feel free to discuss it

because of the uncertain nature of where we might finally conclude the contracts.

A number of things are in the negotiation stage and what will actually simmer out of that I can't say definitely right now.

Q. It is pending at any rate? A. It is pending, sir.

Q. And it has not been abandoned—that plan? A. That is correct; and we have talked to Transco on the subject of transporting that gas for us in lieu of C.D.-3 gas if, as and when those contracts are successfully negotiated.

Q. Can you tell me this without divulging any company secrets: What volume of gas did you have in mind that Transco might transport?

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A. Twenty-five thousand per day.

Q. Was that for 365 days a year? A. Yes, sir. It would be at 100 percent annual load factor.

Q. What would the utilization of that gas be for, boiler fuel? A. I don't quite understand the nature of your question.

Q. Well, if you did go through with that and 25,000 a day was transported by Transco for the Long Island Lighting Company, to what use would Long Island put that gas? A. That gas would be primarily predicated on serving firm gas load. However, due to the seasonal nature of our load, part of that gas would during the valley period get into storage and the remaining portion get into use as electric generating boiler fuel.

Mr. Jerome McGrath: Mr. Brunner, may I interject a question at that point?

Mr. Brunner: Yes.

Mr. Jerome McGrath: Mr. Examiner.

To make this clear, would the 25,000 Mcf per day be in lieu of the 25,000 you are seeking from Transco in this proceeding?

The Witness: Yes. Mr. McGrath, if you were to look on the page of my exhibit—it appears on more than one page, actually, but look at page 3, for instance.

On the bottom of that sheet, you will see a tabulation

720

showing the various types of gas we expect to purchase and you will notice on the fourth line down of that tabulation C.D.-3 gas or X-21, X-21 being transportation in lieu of C.D.-3 in the event that we successfully consummate these contracts.

Mr. Jerome McGrath: So that if you are successful in consummating these contracts, then Transco will not sell you any gas or any of the 25,000 Mcf per day it now proposes under the C.D.-3 rate.

The Witness: That gas which we would purchase would be substituted for C.D.-3. The reserves which Transco has purchased against C.D.-3 would then become available to other customers.

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772

John B. Boniface

Now, as I understand your statement with regard to this "go out" phrase, the company has no plans at this time to purchase gas from independent producers and attempt to obtain some other company to transport that gas or utilization by your company, is that correct? A. We have given it some consideration, but at the moment, we have no negotiations, as far as I know, no negotiations, or no plans to do that.

Q. Now, when you used the term "consider" just what do you mean by the statement that "we have given it consideration" or words to that effect? A. Well, we have heard that other companies were doing it, and we have wondered whether it would be wise for us to do it. We

have made some very preliminary studies, and at the moment we have not made any approach, as far as I know, to any

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producer or any one. We have inquired of Transcontinental if they would be willing, but that was as far as we went.

Q. What did they say? A. They said, in moderate quantities they could handle transportation agreements, but they had some problems with their mortgage, they couldn't take on too much transportation at any one time.

Q. And what volume did you have in mind that you asked that they consider or some of the officials asked that they consider? A. We didn't have any volume in mind. It was too nebulous.

Q. What does the "too much" phrase refer to, volume-wise?

Mr. Miller: I object to any further questions along this line on the ground that it is irrelevant.

The Witness: I don't know.

Mr. Brunner: It may turn out not to be before we are through.

Mr. Miller: Well, you show its relevancy, and I will withdraw my objection. We have no proposals to make a transportation arrangement for Public Service in this case.

Mr. Brunner: No, but apparently they have been making inquiries of you for utilizing their line for that purpose from what this witness has stated.

. . . . . .

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Presiding Examiner: I certainly feel that this Commission is entitled to know about any serious thinking that has been done by any of these companies in connection with gas supply as long as they have this matter, and this large

a program before them here so that they will know what the future holds. I don't think you can understand these matters in a barrel. You have got to have some idea of what the future may hold.

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If there are such arrangements as Mr. Boniface has been discussing, or even planning, that has reached a state where it amounts to something, I think the record should reflect it, but as he appears to indicate, it is in the nebulous stage, that it is, perhaps, plans you are just pursuing something that won't amount to much at this time.

Mr. Brunner: Well, I hadn't quite finished yet. If I can get an answer to that last question, I will go on from there.

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The Witness: Mr. Examiner, perhaps just a little further explanation of the circumstances might put the thing in its proper perspective.

Presiding Examiner: Well, it is up to Mr. Brunner. If he wants that information.

Mr. Brunner: As long as we come back to the "too much", that is all right.

779

Presiding Examiner: Can you tell him what "too much" means before you start off on this expedition now?

What you believe Transco meant when they said they could transport not too much.

The Witness: I don't remember the numbers that Mr. McGraw mentioned. I just don't remember.

I don't want to put anything into the record because I carried away the concept that Transcontinental could not

supply all of their customers with all of their requirements on a transportation basis.

I think that is something that Transco should put in the record, not me. I just don't know.

I think to put this thing in its proper perspective, we should realize that I was talking to Clyde McGraw on the street walking from the hotel to a meeting of the American Gas Association in St. Louis, and we were just generally discussing what was ahead of us, and he mentioned that they would be interested in our buying gas under certain circumstances because he felt that we could perhaps avoid some of the, I think, some of the escalation that might be incurred if they bought the gas. It was something that he thought we should consider. We have not seriously considered it yet.

Now, if the Commission authorizes it, I am sure we will very seriously consider it, but it depends on the circumstance. We have no serious—have had no serious negotiations

whatsoever with Transcontinental with regard to transportation.

By Mr. Brunner:

Q. Did he inform you as to what circumstances he had in mind? A. Well, it would be circumstances that we would consider would be desirable to buy transportation rather than buy pipe line gas, and it would, I think, relate itself to the problem of buying gas, that it would not escalate the other gas that they now have. It would satisfy us that the price was satisfactory. It put the burden of deciding on the price upon us, rather than upon Transcontinental.

Q: Now, in your walk in connection with this conversation, you stated that he, McGraw, stated, they would be willing to transport gas under certain circumstances, and

I assume he meant the circumstances that he had in mind. All I want to know is did he advise you as to what those circumstances were?

Mr. Miller: May I have a continuing objection, Your Honor, to all this for the time that it seems irrelevant and immaterial?

Presiding Examiner: Surely.

The Witness: I don't remember what they were. This was not sufficiently significant in my mind even to write a memorandum about it to our management.

By Mr. Brunner:

Q. I thought you said the management had considered it.

781

A. Well, we discussed it afterwards, but I don't think I made any written memorandum of it, Mr. Brunner.

Q. How did it come to their attention, orally, or how? A. Well, when we learned that certain other customers of Transcontinental were considering transportation agreements, we felt we had to consider them. This was considerably after this conversation, as I recall it, but I am not even too sure of that.

Q. How did you learn about these other customers? A. I don't remember. Perhaps from their filings

Q. Do you know the names of the other customers? A. Yes, sir.

Q. Would you give them to us for the record, please. A. Consolidated Edison and Long Island Lighting.

Q. Were those the only two? A. Yes, sir.

Q. Did the idea of transportation originate with Mr. McGraw of Transco or with your company, or with you? Somebody must have started it. A. I don't remember.

Q. All right. That is all.

Presiding Examiner: Are there any other questions now of this witness.

(781)

Mr. Jerome McGrath: Mr. Examiner, on this last point that Mr. Brunner has been inquiring about, I have a question.

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By Mr. Jerome McGrath:

Q. This gas that you would think about or consider, let's say, purchasing from producers and having transported, would that be for general resale use or for power plant use? A. We haven't considered it that far, Mr. McGrath.

Q. Well, you testified just a moment ago in response to a question to Mr. Brunner that if the Commission authorizes it—or you said you were looking at the proposals of the other companies, and you said if the Commission authorizes it, we will consider it.

I assume you were referring to transportation? A. That is correct.

Q. Now, when you said if the Commission authorizes it, what specifically did you have in mind? A. If it authorizes transportation gas by Transcontinental, we will be obliged to take a second look.

Q. In other words, if the Commission authorizes the Transportation service proposed by Transcontinental for Consolidated Edison, one of the few companies whose name you mentioned, you would be obliged then to consider transportation for Public Service? A. For future purposes.

Q. For future purposes? A. For future supply, I should say.

Q. Well, yes. And whether that would be for resale or

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power plants use, you have not made any determination? A. That is correct.

Q. Thank you. That is all I have.

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Q. Now, Mr. Bruns, let's direct our attention to the proposed transportation service for Consolidated Edison Company of New York. Could you tell us how that arrangement came about? A. I don't know as I know quite what you mean. You

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mean who initiated it?

Q. Well, did you suggest to Consolidated Edison that you would be in a position to transport natural gas for them if they wanted to buy it down in the field? A. We have told all of our customers if they wanted to do that, we would investigate and see whether or not we could. In limits we could do that.

Q. You say all of your customers. You mean all of your customers? A. No, I guess I don't, because it would be impractical to suggest it to some small G customer, we couldn't possibly make such an arrangement.

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A. The Duke Power Company has been interested in investigating it; to my best knowledge they haven't come up with any ideas or plans.

Q. Have they requested Transcontinental to transport natural gas for their account if they were successful? A. If they were successful in making some arrangement, and that is as far as it has gone.

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Q. Is there any provision in rate schedule X-20 which prohibits delivery of displaced gas during peak periods? A. No, sir. I would not say there was.

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James V. O'Connor

Q. (Mr. Jerome McGrath) Now, one further rate was mentioned, and that was in Mr. Bruns testimony, when he referred to a negotiated rate of 19.5 cents per Mcf for make-up gas. Do you recall that? A. (Mr. James V. O'Connor) Yes, I remember it.

Q. And I questioned Mr. Bruns as to how that was derived; and he stated it was a negotiated rate. A. That is correct.

Q. Did you have anything to do with the setting of that rate? A. I did not.

Q. Have you made any study to determine whether that rate covers the costs of rendering the service? A. If you assume that the service is rendered completely off-peak, the price of 19.5 cents is considerably in excess of allocated costs.

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Q. When you say, when you consider it is interruptible, what do you mean by that? A. Well, the only costs which could be assigned to the make-up gas as an off-peak delivery would be transmission commodity costs, which according to my allocation, Schedule No. 5—

Q. What exhibit is that? A. Exhibit 18, Section 4—the transmission commodity costs in connection with the make-up gas to Con Ed is the first figure shown in column 5 of Schedule 5 of Section 4 of Exhibit 18, which is 10.97 cents per Mcf.

Q. And may include all the variable costs such as compressor fuel and the like, is that right? A. It includes all the variable costs and 50 percent of the fixed costs incurred in transporting the gas from the point of receipt to the point of delivery.

Mr. Jerome McGrath: That is all I have, Mr. Examiner.

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Otto Manz

Q. Now, at the time of your direct testimony you touched very briefly on the physical set-up of the Waterside station, and I would like to get it a little clearer in the record as to just what is the physical set-up there.

As I understand it, you have two plants, but you treat it as one, and I am not clear just what it is. I wonder if you could explain a little more fully on the record the set-up there. A. I believe I can. Waterside 2 station, to which we referred in these proceedings earlier, occupies a city block on the East River in New York between 1st Avenue and East River and from 40th Street south to 39th Street.

Waterside 1 is one block south on 39th Street to 38th—I should say it runs in the next block south from 39th to 38th, and also from 1st Avenue to the East River, or to the East River

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Drive.

The older part of this station is Waterside 1, but it has gone through a modernization program most recently than Waterside 2, so that Waterside 1 is now the more modern portion of the station.

Waterside 2 underwent its modernization in the 1930's, so now it is less modern than Waterside 1.

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The electric generation at Waterside during the year 1957 was 2,845,642 megawatt hours. Also for the year 1957, the steam send out from Waterside was 10,020,244 M pounds of steam.

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A. During 1957, the usage by the electric production department in the various plants was as follows.

Astoria Station—these quantities will all be Mmcf—8,728.

Hell Gate, 17,789.

East River, 445.

Sherman Creek, 834.

Waterside, 873.

And the total is 28,669. And then at Hudson Avenue there

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was 1.5 Mmcf used for ignition purposes. And that was purchased from Brooklyn Union.

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Now, could you tell us what the SO_2 content of the coal is, the sulphur content of the coal used at Waterside No. 2?

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Q. While Mr. Thomas is looking that up, I wonder if he could also provide you with the information as to the sulphur content of the oil you use at Waterside? A. We have that also, I believe. The sulphur content of the coal used at Waterside 2 runs about 1.75 per cent. And the sulphur content of the oil used runs between 2.5 and 3.0 per cent.

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Q. You are using oil, however, in the stoker fired units at Hell Gate? A. Hell Gate and Hudson Avenue, yes, sir.

Q. And could you tell us what the sulphur content of the

oil is that is used in those two installations? A. It would run between the same limits that I gave you before.

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Q. How do you account, Mr. Manz, for the differences in the furnaces of the fly ash collection as between boilers 71 and 72 and 61 and 62? A. Without getting into technical, or technicalities of design, which I couldn't sustain, I must only answer that the design of 61 or 62 furnaces are inherently better for completer combustion than those of 71 and 72.

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Now, as I understand it, each dust collector has a decided efficiency when you buy it, isn't that correct?

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A. Designed efficiency, yes.

Q. In other words, the manufacturer guarantees that this dust collector that Consolidated Edison is going to buy will collect so much dust. A. That is right.

Q. And that is the basis upon which you buy it, isn't that correct? A. Yes, one of the considerations.

Q. And when a 95 per cent efficiency is referred to, it refers to each dust collector in and of itself, not in the aggregate. That is true, is it not? A. That is right.

Q. So that when you say that the dust collectors at Waterside, when bought, originally had an efficiency of 95 per cent, the dust collectors in boilers 71 and 72, when installed, had an efficiency of 95 per cent. A. It is my recollection that they did.

Q. Then are you saying that the dust collectors that were installed in boilers 71 and 72 some time after the dust collectors that were installed in boilers 61 and 62 are now

less efficient than the dust collectors— A. No, sir, I am not saying they are less efficient.

Q. Well, wherein does the problem lie, then? A. The problem lies, I believe, in the fact that if the furnaces of 71 and 72 had been inherently well designed for

1194

combustion as some of the other boilers, furnaces of other boilers, that the problem would not exist.

Q. So what you are saying now is that it is the design of the furnace in the boilers 71 and 72, and not the design or efficiency of the dust collectors attached thereto? A. That is right.

Q. Well, referring to point No. 9 of Exhibit 22, you set forth the dust emission in pounds per hour at average annual boiler output and under the heading "all boilers burning coal, per cent of ash and unburned carbon recovered", you have for boilers 71 and 72, 89.5 per cent. Do you see that? A. Yes.

Q. Now, that has nothing to do, that percentage figure, with the amount of coal or other fuel that is burned in the furnace. That relates to the efficiency of the dust collectors, does it not? A. Yes.

Q. So that if your dust collectors had an efficiency of 95 per cent when bought, and you say that the problem is not in the dust collectors, but in the furnaces, then this is an incorrect figure of 89.5 per cent, and should more properly be—well, it is an incorrect figure. A. I think the impression that I intended to give there was that in general the performance of the precipitators was close to the guarantee. In many cases they were better than the

1195

guarantee—in other cases they were not. I did not mean to imply that—and it is a correction I would make, since you are pursuing the efficiencies of the specific collection

equipment on boilers 71 and 72—I should check those particular ones if I can.

I was speaking generally for the station. It was my recollection when those units were bought and installed through the years in the late 30's and 40's that in general those equipments met their guarantees.

Some were above and some were below. I was not—I cannot recall, or do not recall, the exact efficiencies for 71 and 72.

Q. Well, I don't like to belabor this, but there is one point I would like to make clear. In response to one of my earlier questions you agreed that when you bought the dust collectors from the manufacturer, you were guaranteed a certain percentage of efficiency. A. Which may or may not have been attained in practice.

Q. I am sorry, I did not hear you. A. Which may or may not have been attained in permanence and practice after installation.

Q. Well, isn't it a guaranteed efficiency by the manufacturer? A. Yes.

Q. And if it doesn't meet up with the guarantee that the manufacturer gives you, don't you have the right to require them

to install new dust collection equipment that will meet the guarantee? A. That is a hope. You have the right, but you don't always get the performance.

Q. Do you know whether the boilers, or rather the dust collectors connected to boilers 71 and 72 meet the manufacturer's standard of efficiency? A. Since you asked me specifically, I cannot be sure, no. I cannot give it to you at this point.

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Q. Is there any correction you wish to make in your testimony on page 1194, the question and answer at lines 13 to 17? A. Yes.

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Q. What is that correction? A. The answer should have been "no."

Cross-Examination

By Mr. Jerome McGrath:

Q. Let me see if I understand that last correction, Mr. Manz. Let me ask you: Are you agreeing or disagreeing with the statement contained in the question appearing in lines 13 through 16? A. The question asked whether that percentage figure related to the efficiency of the dust collectors, and I answered as though it related solely to the efficiency of the dust collectors, and that is not true.

Q. But your answer yesterday was yes? A. Yes, because I misunderstood.

Q. What does the number refer to, then? A. It refers to the deficiency of the removal of all

1202

of the ash from the coal.

Q. Let's get this straight, now. Let's look at— A. Plate 9.

Q. You have percent of ash and unburned carbon recovered, do you see that? A. Yes.

Q. Does that refer to the ash that is recovered in the pit? A. That includes that, yes, sir.

Q. Ash pit and the collectors? A. That is right. It is the overall figure for the removal of the unburned combustible in the ash.

Q. Does the difference between 89.5 percent and 100 percent go out the stack? A. Yes.

Mr. Le Boeuf: May I have that question.

The Witness: Oh, out of the stack? No, not all of this. Ask your question again, please.

By Mr. Jerome McGrath:

Q. Let's look at the 89.5 percent. My question was whether the difference between 89.5 percent and 100 percent was the amount of ash and unburned carbon that went out the stack? A. Yes.

Q. There was one other item you were going to look up,

I believe, Mr. Manz, and that was the efficiency of the dust collectors on Boilers 71 and 72. A. Yes.

Q. Did you get that information? A. We have most of it, I think.

Q. I am trying to find the place where you asked that. Supposing you provided what information you have as to those collectors.

Mr. Le Boeuf: Does the witness know specifically what question you are asking?

By Mr. Jerome McGrath:

Q. I was referring to the testimony appearing at page 1196 of the transcript, where I asked you the question:

> "Do you know whether the boilers, or rather the dust collectors connected to Boilers 71 and 72 meet the manufacturer's standard of efficiency?"

And your answer was:

> "Since you asked me specifically, I cannot be sure, no, I cannot give it to you at this point."

And I asked further if you had it in your working papers, and you said you could get it, and I asked if you

could get that information, and you indicated that you would.

Does that clarify it for you, Mr. Manz? A. Yes, sir.

Referring to Plate 8, the electric precipitators on

1204

Boilers 61, 62, 71 and 72, were bought with a guaranteed efficiency of 95 percent.

Q. For each precipitator or whatever you call it? A. Yes, sir, the electric precipitator.

Q. How do you account for the difference in efficiencies as between Boiler 61 and 62 and 71 and 72? A. For the reason that because of the performance, differences in furnace performance, the 71 and 72 boilers have a much higher concentration of carbon in the fly ash, and that reduces the efficiency of the electric precipitators.

. . . . . .

Q. And secondly, you stated that because of space limitations at the Waterside 2, you are not able to make an acceptable correction on an economic or engineeringly feasible basis, is that correct? A. Yes.

Q. Since that is the case, Mr. Manz, why wouldn't it be well so far as your company is concerned to remove boilers 71 and 72 from the system and transfer the load over to other

1205

stations connected to it? A. Because our load requirements are such that we can't do that, even if it were economically justifiable.

Q. What load requirements would prevent you from transferring it over to another station? A. We have not been able to add capacity fast enough to take care of the load growth, provide adequate reserve against emergencies, to be able to do that.

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Q. Let me get something straight. We are talking here now only about boilers 71 and 72, those two boilers are the ones that are the problem, isn't that correct? A. That is right.

Q. Now, what percentage of the total system load do Boilers 71 and 72 carry?

. . . . . .

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A. Somewhere in the order of 2 percent.

Q. I believe you stated a moment ago that the system as you have designed it, that is, the electric system of Edison, is such that it will carry the largest unit load loss of a plant, of any given plant, that is correct, isn't it? A: That is correct.

Q. Isn't it a fact that the largest units at Waterside are 80 and 90? A. That is right.

Q. So that the way you have designed your system you could take out the 71 and 72 boilers and carry it by the other plants in your system? A. The design contemplates emergency outage. A plant outage such as would be required for this would have to be above or beside or beyond the loss of the next largest unit.

Q. Are you saying, Mr. Manz, that the Consolidated Edison system could not take up a 2 percent loss in system capacity by transferring the load over to other stations? A. It depends on where that loss has to be sustained, and the Waterside area is very tight.

Q. What is the life expectancy of that plant? I think you indicated in your direct testimony that it is 50 years old, 56, something like that. A. Well, the shell of the building is that old, yes, sir, but the equipment in operation now varies from just a

1208

few years old to perhaps 30-odd years old.

Q. What is the life expectancy of that plant? A. Of the whole plant?

Q. Let's take Waterside 2. A. The Whole plant?

Q. The whole Waterside 2, yes. A. Under what conditions, under the condition that it will be allowed to remain a power plant indefinitely.

Q. Let me put it this way: You said that the Waterside load was the fastest growing on the system, and you have also indicated that it is in a very congested area, you have no way to expand, you have no area with which to improve your facilities.

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Q. Because of the fast growing load on the Waterside Station, and because of the alleged congested area and no room for expansion in that location, that you are going to have to either withdraw the station from operation or shift the loads over to other stations. A. The answer is still no. I will qualify it this way: The station will remain indefinitely, and it will carry the load for which it is designed.

The increased load on the station or in the area, by an orderly system of load forecasting and construction, is taken off Waterside and put on other stations on what we are now calling bulk power substations. It is a shifting of load as it increases. But the station will remain and carry its designed load for an indefinite period.

Q. You stated in your earlier statement that the load at the Waterside station is to be increased in the next several years. Do I hear you correctly? A. Did I say area or station?

Q. I thought you said station. A. Well, if I said station, I should have said area.

1210

Q. Well, are you saying that as the area load grows, that it will be supplied by other stations, or by bulk stations or shifting of load around; is that what you are saying? A. As the load builds up in the Waterside area on the Waterside station, and gets to a point where it is unsafe or unreliable to try to carry it there, plans are made well in advance to shift some of that load to other stations, either existing ones or new substations which may be built.

Q. Now, are you saying now that the loss of Boilers 71 and 72, which would be a 2 percent loss in system capacity, could not be shifted now to other stations or to other sources of supply? A. It cannot under present conditions.

Q. And when you say under present conditions, what are the limitations so far as the present conditions are concerned? A. The present conditions of load growth and construction program to meet that load growth.

Q. Well, am I correct that one of the limiting factors in shifting the load is that you do not have the transmission facilities from other stations into the area served by Waterside?

The Witness: May I have the question again, please.

(The last question, as recorded, was read by the reporter.)

1211

A. One of the reasons, yes.

By Mr. Jerome McGrath:

Q. What would be the others? A. The reasons I cited before.

Q. Now, looking at it from a practical point of view, and the overall Consolidated Edison system, are you here say-

(1211)

ing that a loss of 2 percent in system capacity by taking Boilers 71 and 72 out of service could not be made up by other plants in the system?

Mr. Le Boeuf: I submit he has answered that question twice before.

Mr. Jerome McGrath: I want to get that clear.

By Mr. Jerome McGrath:

Q. Is that what you are saying here? A. I am saying that we cannot sustain that magnitude of loss over a considerable period of time without considerable advance planning.

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Q. Did you make any studies at all, Mr. Manz, to determine whether you could alleviate this problem you have at 71 and 72 by shifting the load over to other stations? A. The alleviation has been under consideration for years, and many studies have been made. And the method that you suggest obviously was not the only one under consideration.

1213

So I answered your question by saying that so far as the shifting of load is concerned as a remedy for stack emission at 71 and 72, is achieved by the very fact that we don't permit overloading of the units in the station; just the normal forecasting, planning of load distribution, achieves that.

That is why I said it that way.

Q. You are going to be increasing your load on the Waterside Station, aren't you? A. No. A station load cannot be increased until extra capacity is added.

Q. I am thinking of your testimony appearing at transcript 138, commencing at line 19, where you state that

these two stations—and I believe you were there referring to East River and Waterside—produced 13 billion pounds or 65 percent of the steam sold by the company in 1957, and they were expected to produce 75 percent in 1958. A. That was in my testimony?

Q. Yes, at transcript 138, appearing at line 19, or commencing at line 19. A. That refers to the steam load.

> "These two stations produce 13 billion pounds or 65 percent of the steam sold by the company in 1957, and they were expected to produce 75 percent in 1958."

True, that is an increase in steam load, but it does not increase the load on the boilers. It really means that

there is a shift of steam generation from electric to steam production.

Q. What you say there, you are taking some of the generating capacity, let's say, and putting it into the distribution system, is that right? A. This is a combination of Waterside and East River figures, and most of the addition will probably come from East River.

Q. Yes, but to the extent that there would be an increase at Waterside which, as I gather from your last answer, you are transferring some of the electric generation over to the steam. A. A moderate amount, yes, that happens all the time.

Q. So that to the extent that you do reduce the electric generation at Waterside and are transferring it over to the steam side, let's says, you are transferring your electric load over to some other station, aren't you? A. That is not a transfer in the sense that you imply it; it happens automatically in the operation of the plant because these these topping units supply steam for the low pressure units which generate electricity and also supply steam for that portion of the steam system which is supplied from Water-

side. And true, there are additional steam customers added, and there again it is in the electric system. If the steam load in the area of Waterside is increased beyond the

1215

capacity of the steam system to supply it, then the customers will have to be added to that portion of the steam system which is fed from East River.

Q. Yes, but I am just trying to get straight your previous answer, and that was that there would not be a further load imposed on the Waterside Station by any increase, whatever it might be, in the steam production, but that there would be more steam going into the distribution, steam distribution system, taking it away from the electric generation system; that is correct, isn't it? A. That is correct, in moderate amounts.

Q. Whatever the amount might be, to the extent that you take the steam away from the electric generation, you have to make up that electric generation by transferring the load over to another station, don't you? A. Yes, in moderate amounts.

Q. When you say a moderate amount, would it be in the neighborhood of 2 percent? A. Probably less than that.

Q. How much? A. Under 2 percent.

Q. Between 1 and 2? A. I don't know.

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Q. What are the present heights of the stacks at Waterside? Would 450 feet sound about right to you?

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The Witness: I might be off a foot or two. 474 feet.

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Q. Well, since the East Stack is the one that apparently is giving you concern, could you increase the height of the East Stack without increasing the others? A. It could be done, certainly, physically.

Q. What is the height—what are the heights of the buildings in the vicinity.

Maybe I can shorten this by asking whether the buildings in the area are higher than the stacks? A. Of course, The United Nations' Building is higher than the top of our stack.

Q. Is that the only one? A. Well, I am not sure. The Tudor City buildings across the street are approximately the same height as the stack, and

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the United Nations is higher, it is 542 feet.

Q. What would be the height of the new stacks that you said a study was made of several years ago? A. A height of 700 feet.

Q. With a stack 700 feet connected to Boilers 71 and 72, you are showing emission problems and the complaints you have had from Tudor City and the United Nations and the like would be greatly minimized, would they not? A. I think they would.

Q. Can you give us a figure as to the cost of constructing the East Stack up to the height of about 700 feet? A. No, I can't.

Q. Would not a 600 feet high stack be sufficient and reduce the cost considerably? A. Probably.

Q. Did you make any investigation in your attempt to alleviate this air pollution problem to construct or to determine whether a stack of 600 feet high at 71 and 72 would eliminate this problem? A. That is a lengthy question. Let me have it again.

(1218)

Q. Let me re-phrase it. You said you have made numerous studies and investigations on this problem of the emissions from the stacks at Waterside No. 2, and particularly Boilers 71 and 72, after your studies you came up with the conclusion that the only answer was to burn natural gas, correct?

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A. That is right.

Q. Now, my question is, did you make any study, or what did your study—let me ask you this. Did you make any studies to determine whether a stack 600 feet high, when connected to Boilers 71 and 72, would not, whether that would not alleviate the problem that you are concerned with? A. As I said, there were many studies made, and I am not familiar with the details of the studies made in New York University Wind Tunnel Laboratory, but that problem was studied thoroughly at that time and at New York University Wind Tunnel Laboratory, and various heights of stacks were investigated by the use of models, and wind velocity and rates of combustion. But it was concluded that it was not economically justifiable. On top of that, there was a restriction on the height of our stacks by an agency which I cannot name exactly but which had to do with the aesthetic character of the neighborhood surrounding the United Nations' community.

We were limited to the present height or a height not very much greater.

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Q. Referring to your testimony, appearing, I believe, at transcript 140, I think it begins at the bottom of 139, you say at the last line 25 on 139, "After years of experimentation with various methods of smoke control, the company is convinced that it would be necessary to rebuild two

large Boilers at Waterside at a cost of $12 million if smoke is to be held within safe limits when coal is used as a fuel."

Do you see that testimony? A. Yes, sir.

Mr. Le Boeuf: What page is that?

Mr. Jerome McGrath: 139, going over to 140.

By Mr. Jerome McGrath:

Q. The two large boilers that you are there referring to are the 71 and 72 that we have been speaking of? A. Yes.

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Q. Let me get your testimony of yesterday. Perhaps the word "purchase" is wrong, but you said usage in the stations in 1957, that appears at transcript 1,178, a total of 28,559 Mmcf, plus an insignificant amount at Hudson Avenue. A. Where is it in the record?

Q. Transcript 1,178, it is 28,559 Mmcf.

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That was the amount of gas you used in 1957 at the Boiler stations named? A. Yes, sir.

Q. Taking that volume of gas if you merely divided by 365 days, it works out to about 78,578 Mcf a day, would you accept that subject to check? A. Yes.

Q. If this air pollution problem at Waterside is so pressing and of such interest to your company, why didn't you use that gas to the extent that it was available in Waterside? A. We don't have the facilities there now for that usage. But associated with the problem of trying to cure the smoke pollution problem, we are interested in getting the pipe line or the gas capacity to carry next winter's load, and the sixty day feature which provides or procures for us the additional capacity that we need

for the gas system, works in beautifully with the use of gas as boiler fuel at Waterside.

Q. How long have you had air pollution problem at Waterside? A. As an approximation, we have had the problem since about 1949 or 1950, because the original installation of dust collecting, fly ash collecting equipment only included electric precipitators, those boilers were installed in 1941, the

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sixties and the seventies, and they were equipped originally only with electric precipitators. But by the time the United Nations was built and the character of the general neighborhood changed, we had to seek to improve the conditions, and so beginning in 1953 through 1955, we added the mechanical collectors in series with the electric precipitators in order to try to solve that problem.

Q. When did you first start purchasing natural gas from Transcontinental? A. Was it 1951?

Q. I think that is correct. And from that time until the present your company has had substantial volumes of Valley gas available to it which was used in its boiler plants throughout, or in various boiler plants of its system, didn't it? A. Yes.

Q. Did you make any effort to try and bring natural gas down to Waterside between 1951 when it first became available, and the time that you asked Transco to transport gas for you? A. There was an attempt made about that time, I can't recall now when it was after we had entered into the early negotiations with Transco or before, but there was an attempt made to secure permission for the use of natural gas to be used as boiler fuel in Waterside to cure that particular situation, and it was refused, it was the subject of some

discussion in the newspapers of the time. I can't recall now what year it was.

Q. When you say permission, what do you mean, Federal Power Commission authority? A. I don't know whether it was formally submitted, but the newspaper articles and the memos of meetings held indicate that somebody on the Federal Power Commission had something to do with it, yes, sir.

Q. Well, did you have to get permission from the Federal Power Commission to use gas in Hell Gate or Astoria? A. No.

Q. Why would you have to get it for use in Waterside? A. If I recall correctly, I don't think the gas had been introduced into New York, and this might have been the forerunner of bringing gas into New York. I say, I am hazy on the time. I am just trying to answer your first question as to whether any attempts had been made to introduce gas as a boiler fuel before, and I say there was.

Q. Let us look at your testimony of yesterday, where you show at the Hell Gate Station in 1957 you used 17,789 Mmcf of natural gas, which, worked out on a 365-day basis, would provide you with well in excess of 25,000 Mcf per day, which I understand is the requirements for the 71 and 72 boilers? A. That is correct.

Q. Why couldn't you take the Hell Gate gas and put it

into Waterside? A. It could be done, except that that wouldn't take care of the gas, boiler gas at Waterside, the year round, because we wouldn't have the capacity, we would have to give it up during the cold weather.

Q. How many days during the year would there be an interruption in the gas at Waterside, if you used the gas that is presently going to Hell Gate?

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The Witness: We would have to eliminate or curtail boiler fuel during the 1958-1959 winter season, under these assumed conditions, 95 days.

By Mr. Jerome McGrath:

Q. Now, based upon your 1957 operations, you would have gas available for the Waterside Station well in excess of 95 days, whatever it was, isn't that true? A. Well, I don't know how many days, because I have not worked that out, and I will not sure we can answer that right off without some work, but the reason we have not tried to pipe this fuel into Waterside is that we lack assurance of a continuous

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supply throughout the year.

Q. Wouldn't, Mr. Manz, a clean stack for nine months out of the year be better than none at all? A. Yes.

Q. Why didn't you do it, if this problem is as pressing as you say it is? A. Because I do not believe that the Air Pollution Control Commission of the City of New York will accept three months pollution.

. . . . . .

Q. Are you saying here that Dr. Greenburg would not stand still for 90 days, or whatever it might be, interruption of gas supply, but would insist on full, complete use of gas

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at 71 and 72? A. I didn't say that, I said I did not think he would, his Commission would tolerate those conditions for three months, stack conditions for three months.

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By Mr. Jerome McGrath:

Q. Yesterday, Mr. Manz, you testified that the tests to determine the amount of—that appears at transcript 1196—to determine the stack emissions was conducted in accordance with the A.S.M.E. Code. A. Yes.

Q. Now, let me ask you this: When you say tests, were more than one test conducted? A. Yes.

Q. Did these tests determine the size of the particles and the effluent from each stack at Waterside? A. I don't remember whether the size was determined, but the emission was determined, yes.

Q. Well, isn't it a fact, Mr. Manz, that the size of the particles emitting from the stack is a very important factor in air pollution? A. Yes.

Q. And you are saying here that you don't know whether the A.S.M.E. tests determined the size of the particles emitting from the stack? A. It may have been done, but the portion of the results which were given to me do not include that.

Q. Let me ask you: Do you know the size of the particles that are in the effluent from the stacks at Waterside?

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A. No, I do not.

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Q. Now, does the City of New York have a standard for a plant such as Waterside as to the amount of stack emission permitted? A. Yes, it has a code.

Q. What is that standard? A. This code is entitled "Rules and Regulations, Including Fee Schedule, for the Issuance of Permits and Certificates in Conformance with Chapter 47 of the Administrative Code of the City of New York, Effective May 15, 1954." It is put out by the Department of Air Pollution Control.

Q. What is the standard that would control the stack emissions, say, at Waterside? A. In a table on page 7 of that document, there is a section labeled 1.2: "Dust." Under that section it reads:

"No person shall cause, suffer, or allow to be

emitted into the open air from the stack of any boiler plants, or to pass a convenient measuring point adjacent to the stack outlet within the City of New York or upon waters within the jurisdiction of said city, dust in the gases to exceed the concentrations set forth in the following table, except as noted in Paragraph B of this rule."

And the table has two headings. The first heading is "Steam Generated in Pounds per Hour." And the other column is headed "Pounds, Dust, per 1,000 Pounds of Steam."

And on the lefthand column under "Steam Generated in Pounds per Hour," the quantities listed are 100,000 or less, 150,000, 200,000, 300,000, 400,000, 500,000, 600,000 800,000, one million or more.

In the righthand column under "Pounds, Dust, per 1,000 Pounds of Steam," 2.2, 1.9, 1.7, 1.4, 1.2, 1.1, 1.0, and 0.9, 0.8.

Q. That is the amount of dust that can be emitted from the stack. Is there any control or any standard, I should say, for smoke or SO_2? A. For smoke, subdivision 1, "Emission is prohibited," heading 1.1, "Dense Smoke," heading, 1.1:

"Except as otherwise herein provided, no person shall cause, suffer or allow dense smoke to be emitted into the open air from any fuel burning equipment

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including but not limited to internal combustion engines, locomotives, marine craft, open fire, incinerator, premises or vessel within the City of New York or upon waters within the jurisdiction of said city:

"Exception: When a fire box is being cleaned or a new fire is being built in a coal boiler or furnace, then smoke may be emitted for a period of four continuous minutes."

Q. How about dense smoke, the definition? A. I just read it as it is set forth herein.

Q. Well, referring to that regulation under the paragraph entitled zero, "definitions," on the first page—do you have it there? A. Yes, I do.

Q. Do you see "dense smoke"? A. Yes.

Q. What is the definition of "dense smoke"? A. As given here it is:

"Smoke so dense that it cannot be seen through at the point of emission. It is equal to or of greater opacity, density or shade then No. 3 on the standard smoke chart of the Department of Air Pollution Control."

Q. How about the restrictions of SO_2, is there any standard for the emission of SO_2? A. If there is, I am not familiar with it.

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Q. Now, going back to the standard on dust, the table that you read into the record, where in that table does the Waterside Station fit in? A. The last item, which is one million pounds of steam generated per hour or more, and the limit is 0.8 pounds of dust per 1,000 pounds of steam.

Q. What are the stack emissions from the stacks at Waterside? A. Just a moment.

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I don't have the exact date of this test, but the report is dated February 3, 1958, and at average annual boiler outputs, Stack No. 2, serving Boilers 61, 62, 71 and 72 at Waterside—I am reading this table incorrectly—71 and 72 boilers feeding into Stack No. 2 are 0.498 pounds of dust per 1,000 pounds of steam; and 61 and 62, 0.95 pounds of dust per 1,000 pounds of steam.

At rated output, 71 and 72 boilers feeding into Stack No. 2, the value is 0.995 pounds of dust per 1,000 pounds of steam, and for 61 and 62, the result was 0.190 pounds of dust per 1,000 pounds of steam.

Q. The important figure so far as meeting the standard is concerned, is the emission from the stack, isn't that right? A. Yes.

Q. And the average for the stack would be about 0.6 at rated capacity? A. I haven't computed the loading. I assume Mr. McGrath has.

Q. We averaged 995 and 190 to come up with 0.6. A. I will accept that.

Q. So on the basis of your February test, the stack emissions from Stack No. 2 at Waterside were within the permissible standards of the City of New York? A. Yes.

Q. And that, of course, is also true of Stacks 1 and 3?

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A. I beg your pardon?

Q. That is also true of Stacks 1 and 3? A. Yes.

Presiding Examiner: Mr. Manz, when you read that series of percentages in connection with smoke in your ordinance regulations there, you said "except as provided in the exception." Does the exception have anything to do with your answers that you are giving here? If it doesn't, don't bother with it.

The Witness: It is very short, Mr. Examiner.

Presiding Examiner: I don't know whether it has any significance, but it is a loose end opened up, and I think you ought to give it.

The Witness: Paragraph 1 reads:

"Dust emission concentrations shown in the above table may be exceeded during the cleaning periods providing the method used and the periods of time are approved by the commissioner."

By Mr. Jerome McGrath:

Q. From the figures that you gave us it would appear, as I think you have pointed out numerous times before, that your problem at Waterside is in Boilers 71 and 72. A. Yes.

Q. Now, the figures that you gave us, as I understand it, pertain to fly ash emissions from the stacks. Are you

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able to live within the smoke emission ordinance? A. Not always.

Q. How often? When would there be a case or situation where you couldn't live within the smoke ordinance? A. There are many occasions, and I can't give you the frequency, but they would occur when sudden load is imposed upon the particular boiler by reason of load interruption to some other generating equipment in the plant, misoperation on the part of the boiler operating personnel, and then in times of sustained heavy loads which cannot be foreseen.

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Q. I take it from your previous answer to me in regard to the tennis court fly ash, you said that it was not a windy day, and therefore you assumed that the fly ash came from Waterside. If the particle size is small enough,

the wind will carry it away some distance from the plant, will it not? A. Some of it, yes.

Q. Of course, it would depend on the size of the particle?

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A. Yes.

Q. And have you made any investigation to determine how often the wind direction or the wind velocity at the Waterside plant would be such as to take the finer particles away from the Tudor City area or the United Nations? A. No, I have not.

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Q. Let's get something straight here. Under the arrangement as you presently have it proposed here, you are asking Transco to transport 50,000 Mcf per day of X-20 gas with the 60-day interruption period whereby you would use Transcontinental's natural gas for whatever use you desire to make of it, I believe you used the term "unrestricted as to end use." A. Yes.

Q. But actually as I understand your proposal, you would use only 25 MMcf per day in your gas distribution system, and use 25 MMcf per day for your year-round use at Waterside plant Boilers 71 and 72? A. Yes.

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A. I say the primary purpose of the X-20 service is to get the capacity for our gas system during the winter peak period.

Q. Have you finished? A. That is the primary purpose, yes, sir.

Q. Well, if that is the primary purpose, why didn't you just enter into a contract with Transco for CD-3 gas up to 50,000 Mcf per day in the beginning? A. There was a

very good reason other than that which prompted us to seek gas from Texas. Up to now we have been practically, or we have had Transco as practically our sole supplier. We have had to come in on the various applications for rate increases, increases that were based—or on contracts that had escalation in them. We thought it was a good time to seek other gas, and see if perhaps we could buy

gas without escalation over a long period of time, and buy gas that we could use for this particular purpose, in addition to getting the pipeline capacity so that we could carry our system in the peak.

Q. What was your concern about the price escalations? You mean to say that in order to avoid the price escallations in the gas purchase contracts that Transco may have that are passed on to the distributors, you decided to go purchase gas in the field yourself? A. Perhaps I can say it more generally this way: Throughout our business, wherever we can, we seek to have at least two sources of supply, to have some sort of competition between our suppliers. And to put it bluntly, this is one source of competion which we sought to get.

Q. But under the terms of rates with producers, the gas can only be used for fuel in the generation of electricity, it doesn't help your gas customers out a bit, does it? A. But it is the start, we hope.

Q. Are you saying now that Consolidated Edison is embarking on a program of purchasing gas in the field and having it transported by Transcontinental as a means of meeting your estimated expanded markets? A. The answer to that question is no; we are not embarking on any program. We are seeking some solution to the problem that I outlined before.

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It is a beginning. We don't know where it is going to lead.

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Q: Now going beyond 50,000 Mcf per day here into the amount of gas that you say you have included in your program for 1960, have you included in that any gas purchased in the field for gas distribution in your system? A. Going beyond the present docket?

Q. Yes. A. No.

Q. So that any of the gas up to the 120,000 Mcf per day of X-20 service, apart from the 60-day provision, would be strictly for boiler fuel use in Edison's stations? A. Yes, if certificated.

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By Mr. Jerome McGrath: You mentioned competition. You wanted gas from two sources. You already have that, don't you? A. Yes.

Q. With Tennessee Gas Transmission Company. A. Yes, sir.

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Q. Wouldn't it be possible in order to alleviate your problem at Waterside particularly having to do with Boilers 71 and 72, to relieve your Hell Gate fuel situation up there by utilizing natural gas that you are presently using at Hell

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Gate in your Waterside plant? A. If we were assured of a continuous supply throughout the year, then the answer is yes.

Q. And if you used that supply that is presently being consumed at Hell Gate, for what period of time would it provide natural gas as a fuel in your Waterside plant, with reference particularly to Boilers No. 71 and 72? A. I would have to work that out, Mr. Brunner. It obviously would not suffice for all year around. But how many days it would not be available, I can't answer at the moment.

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Q. In connection with some questions Mr. McGrath asked you this morning about the possible retirement of the No. 71 boiler in Waterside, you referred to certain planning that would be required before that could be accomplished. What did you mean by that answer? A. Well, today it takes four years of so-called lead-time from the time you make the decision and get approval to install generating capacity until it goes into service. It takes from 18 months to two years to get transmission facilities into service from the time you make the decision to take such a step. And so the proposition that Mr. McGrath described would take a long time to get ready for, and it might take as much as 6 to 10 years, in my judgment.

Q. After the decision? A. After the decision had been made.

Q. Whether it was influenced by any action of this Commission or what have you, before you could convert Waterside? A. That is right.

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Atherton Thomas

Q. Now, at the time of your direct, Mr. Thomas, we discussed the comparative cost of fuels at your Waterside station, and I believe you were going to prepare yourself during the interim period to discuss further the cost figures that you had presented at that time.

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Let me ask you at this point, so we will get it into one place, if you could give us the comparative cost of X-20 natural gas and coal and oil at Waterside.

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The Witness: Mr. McGrath, I can give you the figures we used in computing our exhibits. All these figures are in cent per million BTU.

Waterside No. 2 coal is 42.60¢ per million. X-20 gas used in the electric system will be 41.14¢. We burn no oil—may I change that statement. I do not have an oil price at Waterside, the only oil burned there is a small amount for test purposes in one month.

The average we have used for East River oil in our computations was 49.91¢. That would be the nearest comparable figure.

By Mr. Jerome McGrath:

Q. On page 200 of your direct you gave a cost of oil of 48.76¢. Is there some difference between that figure and the one you gave us today? A. Yes, the 48.76¢ is the oil price at Hell Gate.

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Q. I see. Now, could you tell us how you arrived at the 42.06¢ figure for coal? A. That is a figure given to me by our fuel department.

Q. Do you know how it was arrived at? A. Not in detail.

Q. At transcript 203 I asked you, when you returned for cross examination would you give us a breakdown on these figures and the comparative costs as between coal, oil and gas in your power plants, taking into account the efficiencies and these other factors, and we had a little discussion there and you concluded by saying "yes, I will be glad to."

Now, do you have the information on the various cost factors that go into make up the 42.06¢ figure and the 41.14¢ figure on gas? A. No, sir, prices are prices along side station.

Q. What I am trying to find out, Mr. Thomas, as I thought I had made it clear at the time of your direct, that I would explore into this matter, and how you derived the 42.06¢. A. That is a matter of record in the company, Mr. McGrath.

Q. I thought I had asked that you be prepared at this time to state how it was derived, and I understand that you had agreed to supply that information.

Now, are you saying that you don't have that information? A. I did not understand it that way.

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The Witness: Mr. McGrath, I have the results of a test that was taken on the inlet side of the sixty boilers at Waterside Station, that is, the inlet side of the dust collectors on the sixty boilers at the Waterside station: 99.6 per cent of the dust passed through a standard 50-mesh screen; 97.2 through a standard 100-mesh screen; 91 per cent through a standard 200-mesh screen; and 82 per cent through a standard 325 mesh screen.

By Mr. Jerome McGrath:

Q. Do you know whether the size of the particles would be ten microns or less? A. I don't have a complete reference book here on it, Mr. McGrath, but the standard of comparison, a 325-mesh screen passes material of 44 microns in size and smaller.

Q. Can you give us an estimate as to what would come out of the outlet side of the collector rather than the inlet side? A. I discussed that matter with our technical people who made these tests, Mr. McGrath, and they advised

me that the percentage distribution will be approximately the same on the outlet side as the inlet side, the difference would be in the volume of particles coming out.

Q. Now, is this after the electrostatic precipitator? A. No, this is the inlet to both mechanical and

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electrostatic.

Q. After the electrostatic precipitator, after the dust passes through that, what would be the size of the particles emitting from the stack? A. I have no test on that.

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Q. Isn't it a fact, Mr. Thomas, that any utility, as you say, will emit dust, but when you have the equipment on there, the particles will be so fine that the emissions from the stack would be carried away by the wind from the area of the plant? A. That is one of the factors, Mr. McGrath. But

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your stacks have to be, among other things, your stacks have to be far enough above the surrounding buildings for the wind to be effective.

Q. Are you stating here now that with a 474-foot stack, as Mr. Manz testified to this morning, that the particles of smoke are falling right next door to the Tudor City area? A. I didn't think I made that statement.

Q. That is what you are stating now, is it not? A. Some of them will.

Q. What percentage? A. I have no idea.

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Q. Mr. Thomas, if Edison should use natural gas in

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Waterside no. 2, as it proposes, what would be the displacement of coal, tonnage-wise, could you tell us? A. Mr. McGrath, with the 50,000 Mmcf, of X-20 service—

Q. Mmcf? A. 50 Mmcf—of X-20 service, which is the subject of this docket, approximately 640,000 tons of coal would be displaced at Waterside No. 2.

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Q. Yes. But carrying your projections, as your exhibits reflect them, to 1960 and 1961, and if your program was to go through as you propose, your gas department would be using—excuse me—your electric department, in the boiler fuel use, would be using more gas than your gas department? A. Primarily in the smoke control.

Q. Yes, but that is the case, is it not? A. That is the case.

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Q. I see. Now, you spoke about complaints yesterday from people. Just what was the magnitude of those complaints. Was it, say, one or two individuals, or just what did you mean to convey by your testimony with reference to your use of the term "complaints from people?" A. Well, Mr. Brunner, I didn't have too much data on that yesterday. It seemed to us so obvious that Con Edison wouldn't have spent $43 million to take care of smoke conditions if we had not been thoroughly convinced we had a problem. I did do a little checking on it overnight. I find that our tests, as Mr. McGrath described them, vary from a call on the customer to extensive tests such as we ran at the United Nations for two months in a row, where we kept men on all day shifts testing eight hours a day. There were some twenty tests which are of sufficient

importance to have our trained technicians and engineers go to the customers' premises, collect samples of the dust, and take them over to our chemical laboratories for analysis, where miscroscopic examination showed flue ash, which was identical in

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character with that emitted from the Waterside stacks.

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Couldn't the gas now being used in Hell Gate be transferred to the boilers for use as a fuel at Waterside?

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The Witness: There are several reasons why that has not been done, Mr. Brunner.

By Mr. Brunner:

Q. Well, I think first of all the question was could that be done?

Presiding Examiner: As a physical operation?

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Mr. Brunner: Yes.

The Witness: Physically, but it would not satisfy our smoke problem.

Mr. Brunner: All right.

By Mr. Brunner:

Q. Do you care to supplement that statement? A. Yes. I think if you would perhaps look at revised plate 11—I believe that is Exhibit 79, you will see that on line 12, under the year 1959, there is only 12,036 Mmcf of gas, interruptible gas, available for boiler fuel. And if you remember the figures I gave Mr. McGrath yesterday showed that we would need 16,770,000 Mcf in Waterside in 1959

for these purposes. So we would not have enough interruptible gas available on an annual basis.

Again, we would not have enough gas available for approximately 100 days every year to take care of the smoke conditions. And third, that amount of gas, we feel, can far better be used in the future for storage than to be transferred to the Waterside plant.

We would prefer to reserve that use for future storage.

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Q. Do you know whether Consolidated Edison has made any plans in the last ten years—let's say the last eight years, because you only go back to 1950—to transfer some of the electric load from Waterside No. 2 to some of the new units being installed at Astoria and Arthur Kill and other stations? A. Well, I am not a planning engineer, I can't speak in detail on it. But my understanding of what the Edison Company is doing in regard to Waterside and the new stations is that as fast as the load grows, it is picked up on the new stations. The load on Waterside itself does not vary greatly. The new stations are only going in fast enough to take the load growth.

Q. Then as I understand it, your answer to my inquiry is no, they have made no plans.

Would you go back and read my question, please.

(The question beginning at line 1 above, as recorded, was read by the reporter.)

A. I don't believe we have been able to transfer any substantial load from Waterside.

By Mr. Brunner:

Q. The answer is no to my question, you have made no plans, to the best of your knowledge? A. To the best of my knowledge.

Mr. Le Boeuf: I think the difficulty is the word "plans."

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You can be studying but not carrying them out.

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1353

Presiding Examiner: Mr. Thomas, I know this is in the record, probably in a number of places, and you may not be the one to answer it and your counsel may say it is a legal question. But what is your understanding of the reason in the producer contracts with Consolidated Edison that there is a prohibition against the use of this gas for sale for ultimate public consumption rather than boiler fuel use?

The Witness: Well, I can tell you what they told me and why we consented to it. They said that is the only way they would sell it to us.

Presiding Examiner: I realize that; it is in the contracts. But do you know why they don't want you to use that gas for any other purpose than boiler fuel?

The Witness: I have the feeling that they were allergic to proceedings before the Federal Power Commission.

1354

Presiding Examiner: That is your understanding of the reasons?

The Witness: That is my understanding: that they do not want to be under regulation and the necessity of long proceedings before the Commission.

. . . . . .

1355

Q. But Boilers 71 and 72 are the only ones that exceed the standard of the City of New York code or whatever it is that we are referring to, that we were referring to yesterday, the eight-tenths pounds per 1,000 pounds of

steam? A. Our technical people advise me that none of the boilers at Waterside exceed the standard.

1401

Mr. Barrett: Before we get into Dr. Greenburg's cross, I wonder if I could take a minute or two.

I have a request to make of the staff which I hope they will give serious consideration to. I am unaware of what procedural steps may be taken in this proceeding to accelerate final determination.

I am not going to conjecture what Your Honor or the Commission will do as to these steps, but I do have this problem.

We have contracted with Transco for additional gas. As Mr. Parlette testified, we have already sold a base heating load in this incremental gas supply.

Of course, we will support any motion that may be made to accelerate a final decision. But we are concerned that such decision may come too late for service next winter.

I think the record is complete as to the dates by which construction must be started to meet the services date, so I will not enlarge on that.

One of the more important aspects in any proceeding before this Commission, and one which we respect, although perhaps we may not always agree with, is the opinion of the

1402

staff as to the merits of the application. In some cases, the staff presents a direct case, and the participants then know what the staff's position is.

But when the staff does not present a case, the participants may never know what the staff's position is until the final brief is filed, and that may be some weeks away in this proceeding.

My company would appreciate it if the staff would take under advisement the possibility of stating for the record before the hearing is closed their position with respect to the various proposals presented here, at least insofar as the Leidy storage is concerned, and the additional CD and G-rate sales to the existing customers of Transco.

I make this request because if we know that the staff is opposing the additional sales to the CD and G customers of Transco, that is, the existing customers, our company may want to turn around and take some other steps to get the gas for next winter.

It is only a little over six months before we may need the delivery of the gas which we are seeking in this proceeding. Obviously if the staff's position is known next week rather than a month from now, when their brief may be filed, we will then have much more time to move around if necessary. And at this stage every day is vital.

I don't want to put the staff on the spot, I don't want

them to make any commitments, or rush them into making any decision, but if by any chance they will let us know before the hearing is closed what their position will be on certain phases of this application, I and my company would greatly appreciate it if they would state it for the record.

. . . . . .

Dr. Leonard Greenburg

By Mr. Brunner:

Q. Dr. Greenburg, have you yourself made any studies with regard to physical damage, if any, to the structures resulting from the stack emissions from the Consolidated Edison plants that we have under discussion here? A. Well, our staff has made observations in the field, yes. I haven't myself, no.

Q. Do you have supplemental reports available here at the present time resulting from those studies? A. I don't think so, no.

• • • • • • • • • • • •

1414

Q. Then you can't say at this time from the information that you have that the fly ash emission from the Consolidated Edison plants has had any detrimental effect on the health of the citizens of New York in that area in which the plants are located, is that correct? A. No, except my general medical opinion that the presence of so much fly ash along with sulphur dioxide is detrimental to the health.

This is my expert opinion in this area of knowledge.

Q. But not from any studies. Not from any studies made in the area? A. That is correct.

Q. Now, is that equally true with regard to any physical damages to structures in the area resulting from the fly ash emission and smoke or smog in the area in which Consolidated Edison plants are located? A. No, as I said before, the opinion as to damage to structures is based on work that was done by my staff.

1415

Q. In the area here under consideration? A. Well, all over various areas in the City, including this area, yes, sir.

Q. And what was the result of that study? A. Well, in general what we have found is this. When pollution is emitted from a stack, the pollution tends to travel in what we call a plume.

Now, if the area is uncluttered with buildings, this plume travels a certain distance, and is dissipated in the atmosphere, and the solids in general fall out on the ground. This is a usual phenomenon.

On the other hand, if the stack is more or less surrounded by tall buildings, then prior to its dissipation, the stack contents enter these adjoining building, or deposit right on the adjoining buildings.

Now, this is what happened in this particular area that we have been discussing.

Q. Well, what has been the physical effect upon the structures that you have in mind? A. Well, we prepared, I believe, a report on this subject. Let's see if I can find it. We prepared a report on this particular problem in general entitled "Corrosion Aspects of Air Pollution", by myself and Dr. Jacobs, who is head of my research laboratory, and this was presented at the Northeast meeting of the National Association of Corrosion

Engineers on May 10, 1955, as a part of a symposium. And I believe it was published in the American Paint Journal.

Now, in this particular paper, we reviewed the subject of corrosion, and we speak about the effects of various materials in the atmosphere in polluted atmospheres. And we speak about the tremendous output of sulphur dioxide in New York City, and the content of sulphur dioxide in the atmosphere in New York.

And we presented, I believe, tables which show the amount of sulphur dioxide in the air and its radiations. The tables are at the rear of this manuscript. And I would be glad to give you this if you are interested in seeing it.

Q. What I am interested in, Dr. Greenburg, is whether or not you have any figures here or are able to express an opinion with regard to the physical damage of the structures in the area in which the Consolidated Edison plants are located that are the subject of discussion in this proceeding here? A. Let me see now. As far as I can see,

none of this manuscript relates specifically to this area, Mr. Brunner.

Q. Can you give me an opinion, or can you give me any information as to the dollar damages, if any, to the structures in the area in which the Waterside plant is located as a result of this air pollution that we have had

1417

under discussion? A. I don't think I could give you a figure that I would consider very reliable, Mr. Brunner.

Mr. Brunner: Would you read my question back, please?

(The last question, as recorded, was read by the reporter.)

Mr. Brunner: That is fine. Thank you very much, sir. That is all.

1420

By Mr. Howley:

Q. Dr. Greenburg, there was testimony here yesterday afternoon either by Mr. Manz or Mr. Thomas, I am not sure which one it was, who testified to a scale of permissible amounts of dust which appear in your rules and regulations. Do you recall that testimony? Were you present when that took place? A. Yes, sir.

Q. Is that one of the tests with respect to air pollution in the City of New York?

1421

A. Yes, sir, it is.

Q. Are there others? A. Yes, sir.

Q. Would you describe the others? A. Yes, sir. With reference to installations such as the one under considera-

tion here at this hearing, the department has at least three approaches.

One is the requirement that sources may not emit certain types of smoke for certain periods of time or in excess of certain periods of time, which we call a prohibition on emission of smoke. That is one. And I can read that, if you would like me to.

The second is a general clause on the emission of particulate matter. And I think it is very important, and with your permission, I would like to read this. This is Section 1.3 in our rules. And the paragraph heading is

"Particulate and Other Matter." Section 1.3.1 says:

> "No person shall cause, suffer or allow to be emitted into the open air from any fuel or refuse burning equipment, internal combustion engine, locomotive, vehicle, incinerator, open fire, floating equipment, premises, industrial process, or from any other source within the city of New York, or upon waters within the jurisdiction of said city, any air contaminant, harmful or objectionable substance, including, but not limited to, smoke, soot, fly ash, dust, fuels, gases, vapors, nuisance odors, that may be a detriment to the property of others or that may be a nuisance to any person not being therein or thereupon engaged. When the Commissioner shall declare a nuisance as above defined to exist, it shall be deemed to have been created and may be summarily abated by the Commissioner or his duly authorized agent."

This is the general nuisance clause in our rules and regulations.

Q. And this clause that you just quoted has nothing to do with specific measurements, is that correct? A. No, this doesn't require anything more than the opinion of the

Commissioner based on observations by him or his assistants as to what is taking place.

. . . . . .

1423

Q. Very well. I will ask you very directly. In your opinion, Doctor, do you regard that precipitation in that neighborhood as directly attributable to the Waterside plant? A. I do.

. . . . . .

1424

By Mr. Jerome McGrath:

Q. Is there any particular stack at Waterside that you say this precipitation is coming from? A. The Department of Air Pollution Control, my department, finds fault with a number of Consolidated Edison Company installations, and we have reason to believe that the Waterside stack, the Waterside stacks, are all putting out at times more pollution than they should. But we think, based on records in our department that the stack that serves Boilers 71 and 72, I believe, is the greatest offender. If I am correct, it was 71 and 72. We believe that this was the stack that polluted the tenis court to which reference was made earlier in the day.

. . . . . .

1426

I might say, in connection with the question you asked immediately before about the output of this area, we did a study for eight months on the tennis court about which there was some discussion today. And we put some soot fall jars on this tennis court to collect the material that was deposited there. And the report which I got from our laboratory showed that the deposit in those soot fall jars

amounted to what was 180 tons per square mile, whereas the average for the city as a whole is something of the order of 70 to 75, something in that general nature.

Moreover, we took this material from the soot fall jars and examined it under the microscope and made photographs of it, and we found that this was the material that was emerging from the stack of the Consolidated Edison. This is what we did specifically in that particular case.

. . . . . .

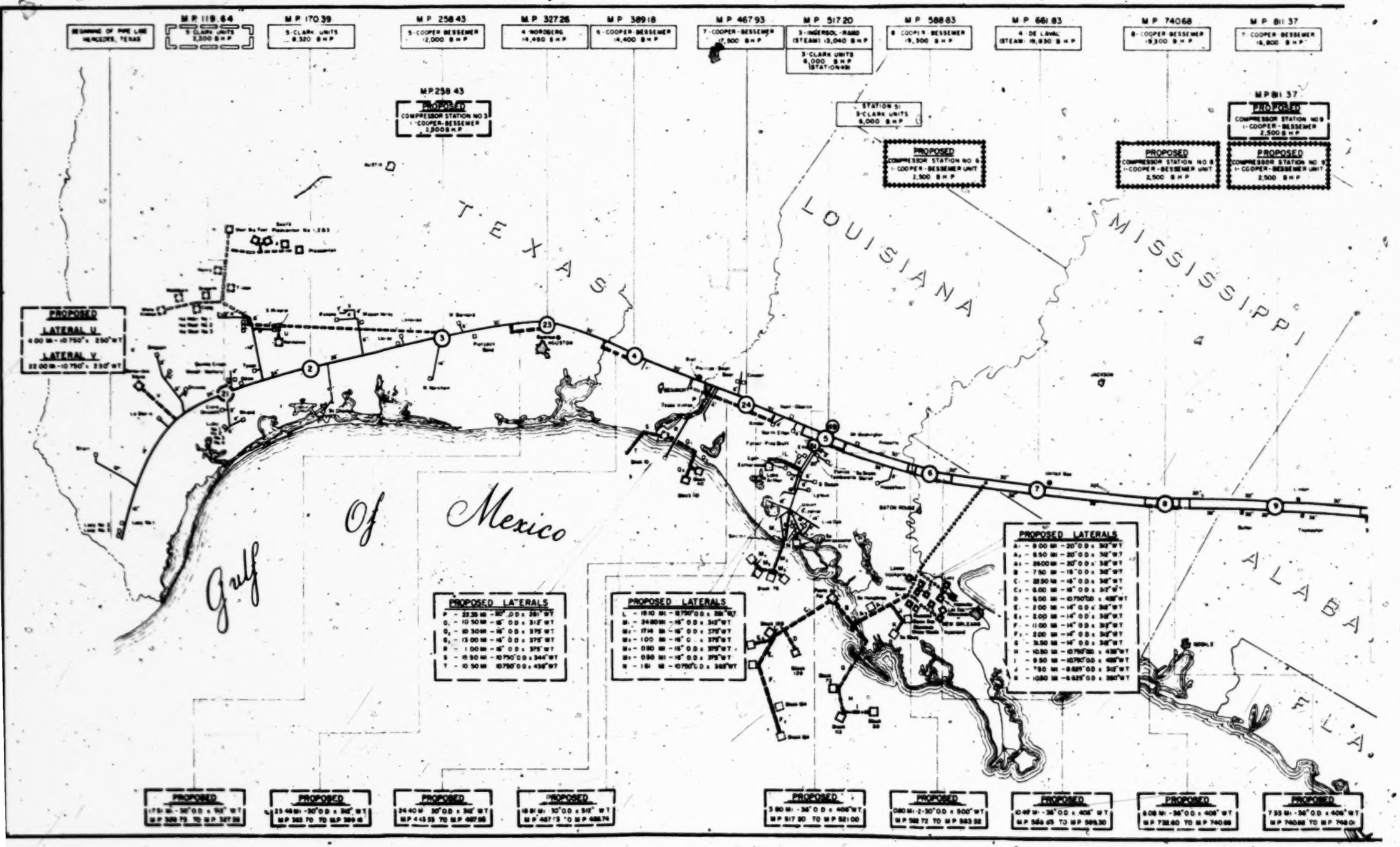
1427

Mr. Brunner: How do you relate the soot fall that you have just referred to, to the Waterside plant?

The Witness: This was close up to the Waterside plant, and this was the large particles which would settle out directly from the stack. You see, when you have a stream of pollution coming from a stack, you have a statistical assortment of particles of many different sizes. There are particles there that may be half a micron in size, ranging up to particles of 10 and 15 and 20 microns.

Now, the heavier particles deposit nearer the stack, nearer the point of source, and the lighter particles drift off in the distance and deposit at some distance away, or if the wind is strong enough, they may be swept away in the wind.

. . . . . .


BEGINNING OF PIPE LINE MENGDEN, TEXAS
M P 119 64
5-CLARK UNITS 2,500 B H P
M P 170 39
5-CLARK UNITS 9,320 B H P
M P 258 43
5-COOPER BESSEMER 12,000 B H P
M P 327 26
4-WORTHINGTON 14,480 B H P
M P 389 18
6-COOPER-BESSEMER 14,400 B H P
M P 467 93
7-COOPER-BESSEMER 17,500 B H P
M P 517 20
3-INGERSOL-RAND (STEAM) 13,040 B H P
3-CLARK UNITS 6,000 B H P
STATION 4A
M P 588 83
8-COOPER BESSEMER 19,300 B H P
M P 661 83
4-DE LAVAL (STEAM) 19,930 B H P
M P 740 68
8-COOPER BESSEMER 19,300 B H P
M P 811 37
7-COOPER BESSEMER 16,800 B H P
M P 258 43
PROPOSED
COMPRESSOR STATION NO 3
1-COOPER-BESSEMER
2,500 B H P
STATION 5
3-CLARK UNITS
6,000 B H P
PROPOSED
COMPRESSOR STATION NO 6
1-COOPER-BESSEMER UNIT
2,500 B H P
PROPOSED
COMPRESSOR STATION NO 8
1-COOPER-BESSEMER UNIT
2,500 B H P
M P 811 37
PROPOSED
COMPRESSOR STATION NO 9
1-COOPER-BESSEMER
2,500 B H P
PROPOSED
COMPRESSOR STATION NO 9
1-COOPER-BESSEMER UNIT
2,500 B H P
PROPOSED
LATERAL U
4.00 MI - Ø 10.750" x .250" WT
LATERAL V
22.00 MI - Ø 10.750" x .250" WT
TEXAS
LOUISIANA
MISSISSIPPI
ALABAMA
FLA.
Gulf Of Mexico
PROPOSED LATERALS
PROPOSED LATERALS
PROPOSED LATERALS
PROPOSED
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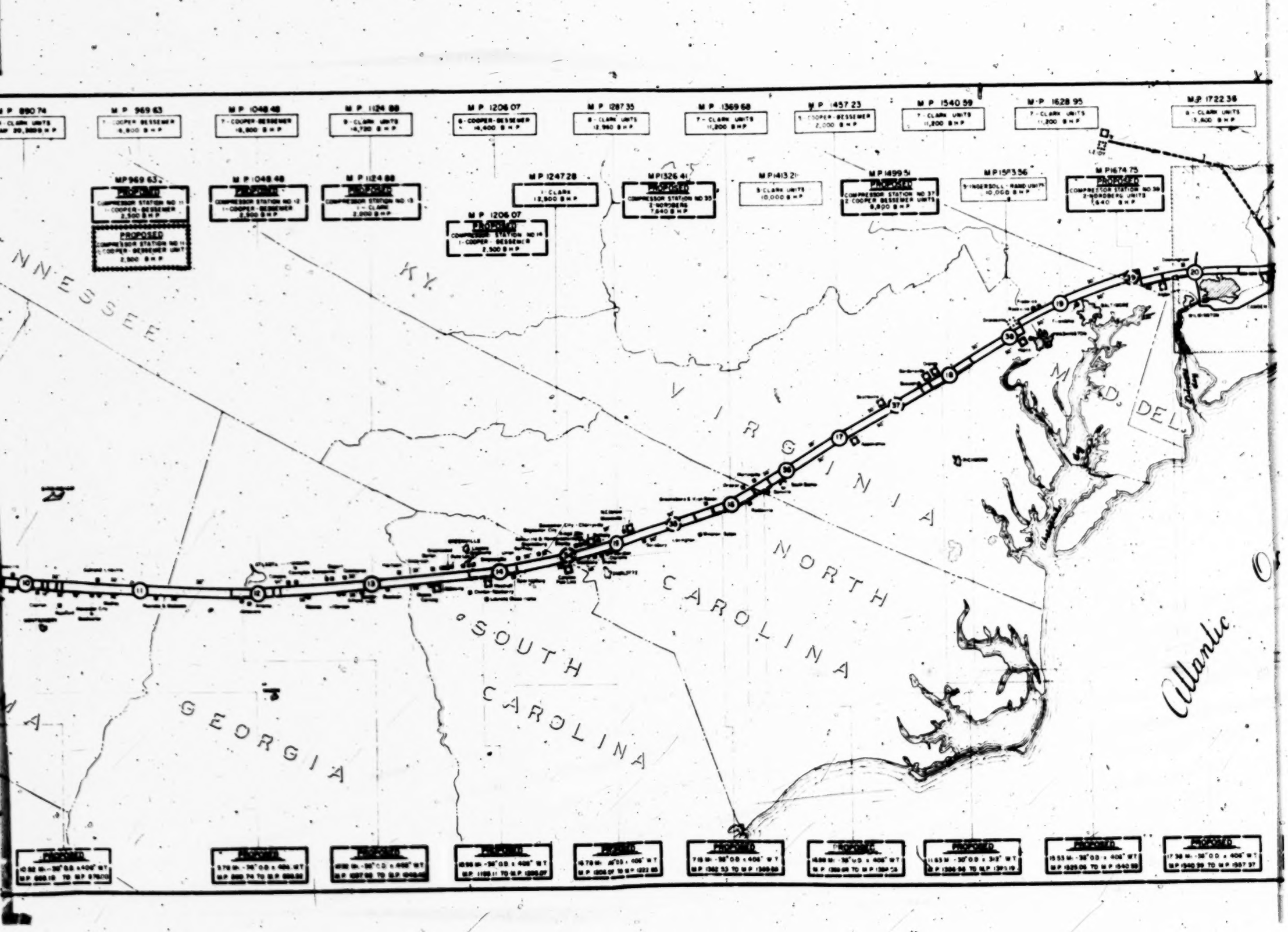
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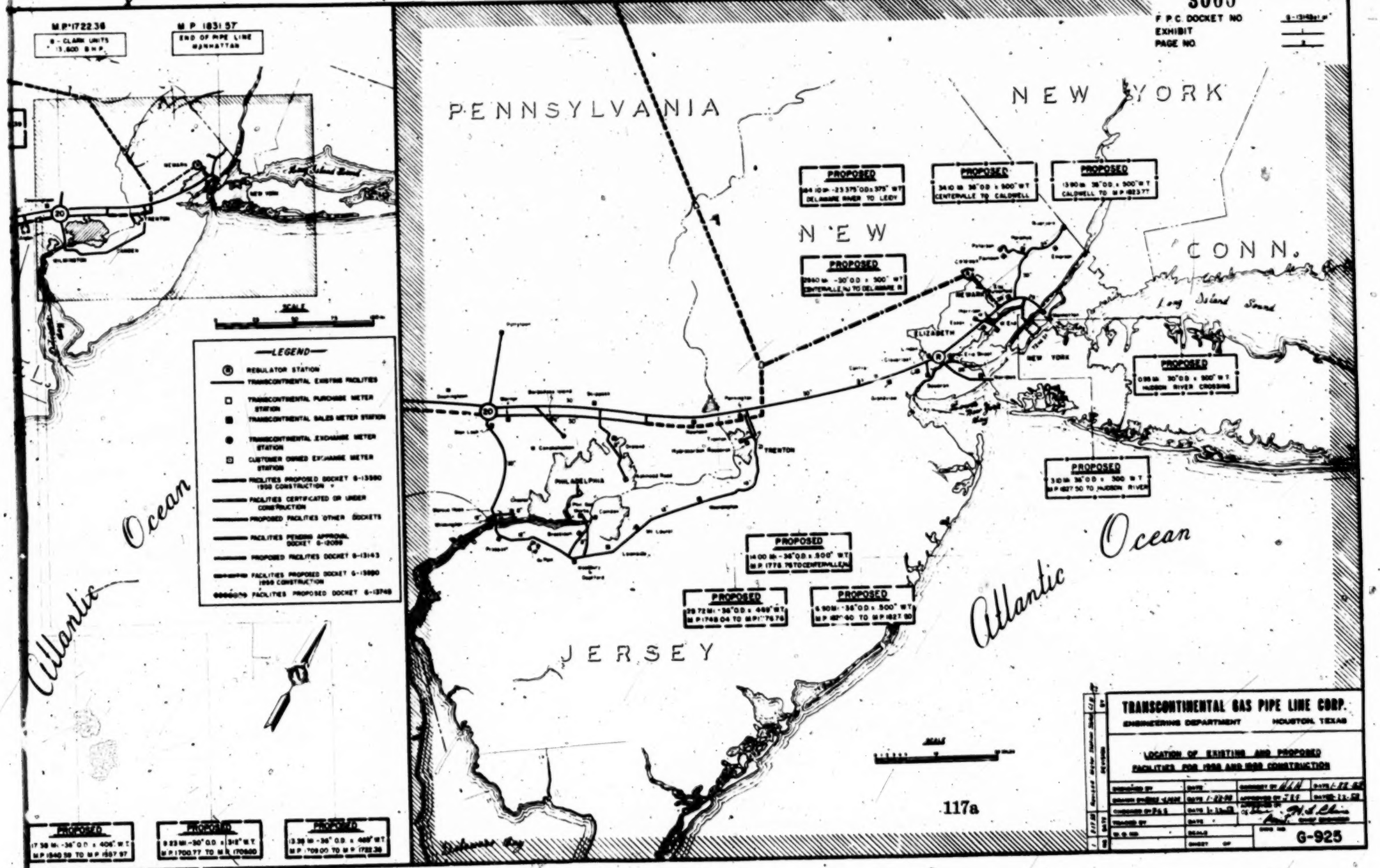
M P 969 63
M P 1048 48
M P 1124 88
M P 1206 07
M P 1287 35
M P 1369 68
M P 1457 23
M P 1540 59
M P 1628 95
M P 1722 38
MP 969 63
PROPOSED
COMPRESSOR STATION NO 11
1 - COOPER - BESSEMER
2,500 B H P
PROPOSED
COMPRESSOR STATION NO 11
1 COOPER BESSEMER UNIT
2,500 B H P
M P 1048 48
PROPOSED
COMPRESSOR STATION NO 12
1 - COOPER - BESSEMER
2,500 B H P
M P 1124 88
PROPOSED
COMPRESSOR STATION NO 13
1 - CLARK
2,000 B H P
M P 1206 07
PROPOSED
COMPRESSOR STATION NO 14
1 - COOPER - BESSEMER
2,500 B H P
M P 1247 28
1 - CLARK
12,500 B H P
M P 1326 41
PROPOSED
COMPRESSOR STATION NO 35
2 NORSBERG
7,040 B H P
M P 1413 21
5 CLARK UNITS
10,000 B H P
M P 1499 51
PROPOSED
COMPRESSOR STATION NO 37
2 COOPER BESSEMER UNITS
6,800 B H P
M P 1583 56
5 INGERSOLL - RAND UNITS
10,000 B H P
M P 1674 75
PROPOSED
COMPRESSOR STATION NO 39
2 NORSBERG UNITS
7,040 B H P
TENNESSEE
KY.
VIRGINIA
NORTH CAROLINA
SOUTH CAROLINA
GEORGIA
M. D. DEL.
Atlantic



TRANSCONTINENTAL GAS PIPE LINE CORP.
ENGINEERING DEPARTMENT HOUSTON, TEXAS

LOCATION OF EXISTING AND PROPOSED FACILITIES FOR 1958 AND 1959 CONSTRUCTION

DRAWN BY DATE CHECKED BY DATE
DRAWN BY DATE 1-22-58 APPROVED BY DATE 1-22-58
TRACED BY DATE 1-23-58 DRAFTING SUPERVISOR
TRACED BY DATE
W.O. NO. SCALE DRAWING NO. G-925
SHEET OF

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
SYSTEM DELIVERY CAPACITY VS.
SYSTEM DELIVERY REQUIREMENTS
[illegible]R 1, 1958 THROUGH OCTOBER 31, 1959
(MCF @ 14.7 PSIA)

September

Line No.		1958 September (1)	October (2)	November (3)	December (4)	January (5)	February (6)	March (7)	April (8)	May (9)
1	System Delivery Capacity	925,000	935,000	1,162,000	1,177,000	1,181,000	1,281,000	1,172,000	1,162,000	1,157,000
2	System Daily Delivery Capacity	780,000	790,000	935,000	945,000	950,000	950,000	940,000	935,000	930,000
3	System Daily Delivery Capacity into Zone 3	145,000	145,000	227,000	232,000	231,000	231,000	232,000	227,000	227,000
4	System Daily Delivery Capacity into Zones 1 and 2 (Line 2 less Line 3)									
5	System Monthly Delivery Capacity	27,333,700	28,550,200	34,337,100	35,939,700	36,061,800	32,572,000	35,787,900	34,337,100	35,329,000
6	System Monthly Delivery Capacity into Zone 3	23,400,000	24,490,000	27,629,300	28,855,600	29,008,300	28,201,000	28,702,900	27,629,300	28,397,600
7	System Monthly Delivery Capacity into Zones 1 and 2 (Line 5 less Line 6)	3,933,700	4,060,200	6,707,800	7,084,100	7,053,500	4,371,000	7,085,000	6,707,800	6,931,400
8	System Delivery Requirements (by months)									
9	Zone 3									
10	Firm Sales for Resale excluding Leidy	19,706,500	20,950,700	23,624,400	24,528,500	24,673,700	23,314,900	24,432,000	21,326,600	21,774,300
11	Firm Transportation	600,000	620,000	2,100,000	2,170,000	1,920,000	1,710,000	2,107,500	2,100,000	2,170,000
12	Available for LTF or other use	-	-	540,000	558,000	558,000	504,000	558,000	540,000	558,000
13	Leidy Requirements									
14	(a) Base Storage Volumes from Southwest	2,569,100	1,975,200	764,900	940,700	1,156,800	994,600	985,400	1,190,700	1,340,900
15	(b) Top Storage Volumes Provided by Customers	-	-	-	-	-	-	-	1,872,000	1,934,400
16	Interruptible Sales and Transportation	524,400	620,000	600,000	620,000	620,300	560,000	620,000	600,000	620,000
17	Total Deliveries into Zone 3 (Lines 10, 11, 12, 14 and 16)	23,400,000	24,165,900	27,629,300	28,817,200	28,932,500	27,083,500	28,702,900	27,629,300	28,397,600
18	Unused Capacity into Zone 3 Available for E Gas Sales (Line 6 less Line 17)	-0-	-0-	-0-	38,400	-0-	-0-	-0-	-0-	-0-
19	Zones 1 and 2									
20	Firm Sales for Resale	2,672,500	3,235,100	4,782,100	5,480,500	6,233,700	5,590,800	5,566,910	4,874,900	4,315,800
21	Firm Direct Sales	120,000	124,000	150,000	155,000	155,000	140,000	155,000	150,000	155,000
22	Available for LTF or other use	-	-	180,000	184,000	185,000	165,000	180,000	160,000	141,000
23	Interruptible Sales and Transportation	990,900	1,025,200	839,100	720,900	555,600	592,700	189,090	1,522,900	2,246,500
24	Total Deliveries into Zones 1 and 2 (Lines 20, 21, 22 and 23)	3,783,400	4,384,300	5,951,200	6,540,400	7,129,300	6,488,500	7,085,000	6,707,800	6,858,300
25	Total System Delivery Requirements (Lines 17, 18 and 24)	27,183,400	28,550,200	33,580,500	35,396,000	36,061,800	33,572,000	35,787,900	34,337,100	35,255,900
26	Unused System Capacity Available only in Zones 1 and 2 (Line 7 less Line 24)	150,300	-0-	756,600	543,700	-0-	-0-	-0-	-0-	73,100
27	Total Line 25 and 26	27,333,700	28,550,200	34,337,100	35,939,700	36,061,800	33,572,000	35,787,900	34,337,100	35,329,000

	1959 May (9)	June (10)	July (11)	August (12)	September (13)	October (14)	Totals for Leidy Development Period (15)
00	1,157,000	1,147,000	1,138,000	1,138,000	1,142,000	1,147,000	
00	930,000	920,000	915,000	912,000	915,000	920,000	
00	227,000	227,000	223,000	226,000	227,000	227,000	
00	35,329,000	33,893,800	34,748,800	34,748,800	33,746,100	35,023,600	472,409,600
00	28,397,600	27,186,000	27,939,500	27,847,900	27,038,300	28,092,200	382,417,900
00	6,931,400	6,707,800	6,809,300	6,900,900	6,707,800	6,931,400	89,991,700
00	21,774,300	21,008,000	21,826,600	21,825,600	21,154,400	22,556,300	311,706,500
00	2,170,800	2,100,000	2,170,000	2,170,000	2,100,000	2,170,000	26,207,500
00	558,000	540,000	558,000	558,000	540,000	558,000	6,570,000
00	1,340,900	1,066,000	830,500	739,900	771,900	5,000	15,331,600
00	1,934,400	1,872,000	1,934,400	1,934,400	1,872,000	1,880,800	413,300,000
00	620,000	600,000	620,000	620,000	600,000	620,000	8,444,400
0	28,397,600	27,186,000	27,939,500	27,847,900	27,038,300	27,790,100	381,560,000
=	-0-	-0-	-0-	-0-	-0-	290,800	329,200
0	4,315,800	3,745,700	3,656,900	3,694,800	4,422,400	5,324,100	63,590,210
0	155,000	150,000	155,000	155,000	150,000	155,000	2,069,000
0	141,000	116,000	113,000	113,000	143,000	173,000	1,853,000
0	2,246,500	2,173,600	2,241,000	2,241,000	1,541,710	925,400	18,805,600
0	6,858,300	6,185,300	6,165,900	6,203,800	6,257,110	6,577,500	86,317,810
0	35,255,900	33,371,300	34,105,400	34,051,700	33,295,410	34,658,400	468,207,010
=	73,100	522,500	643,400	697,100	450,6[illegible]	365,200	4,202,590
0	35,329,000	33,893,800	34,748,800	34,748,800	33,746,100	35,023,600	472,409,600

SCHEDULED PURCHASES VS SYSTEM REQUIREMENTS
ANNUAL WITHDRAWALS
JANUARY 1, 1958 TO JANUARY 1, 1979
(All Volumes in MMcf @ 14.73 Psia)

Line No.	Field Name	Seller	Remaining Reserves Available To Transco 1-1-58	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
22	Subtotal Firm Purchases		6,760,466	329,590	384,055	387,150	385,147	385,148	385,147	385,148	385,148	385,148	385,148	385,148	385,148	383,989
23	Spot Gas			16,480	19,203	19,358	19,257	19,257	19,257	19,257	19,257	19,257	19,257	19,257	19,257	19,199
24	Total Purchases			346,070	403,258	406,508	404,404	404,405	404,405	404,405	404,405	404,405	404,405	404,405	404,405	403,188
25	Total System Requirements			346,070	403,258	406,508	404,404	404,405	404,405	404,405	404,405	404,405	404,405	404,405	404,405	403,188
26	Deficiency															

Li No	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	Total Gas 1-1-58 to 1-1-79	Remaining Gas as of 1-1-79
)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)
248	385,148	385,148	385,148	383,989	350,947	319,528	291,176	261,156	225,432	165,473	97,607	74,263	6,736,697	23,769
257	19,257	19,257	19,257	19,199	17,547	15,976	14,559	13,058	11,272	8,274	4,880	3,716	336,835	
205	404,405	404,405	404,405	403,188	368,494	335,504	305,735	274,214	236,704	173,747	102,487	77,979	7,073,532	
205	404,405	404,405	404,405	403,188	396,937	396,756	396,756	396,756	396,504	396,281	395,011	395,623	8,368,292	
2t					28,443	61,252	91,021	122,542	159,800	221,534	292,524	317,644	1,294,760	

5361

Transcontinental Gas
Pipe Line Corporation
FPC Docket Nos. G-13143 *et al*
Exhibit 18
Section 4

ALLOCATION OF COST OF SERVICE

YEAR 1960

5362

TRANSCONTINENTAL GAS PIPE LINE CORPORATION

TABLE OF CONTENTS

COST OF SERVICE AND ALLOCATION THEREOF

YEAR 1960

Schedule	*Description*
1	Comparison of Allocated Cost of Service with Revenues
2	Summary of Allocated Cost of Service
3	Allocation of Cost of Gas Purchased for Sales, Purchased Gas Expenses, and Production and Gathering Costs
4	Allocation of Transmission Demand Costs
5	Allocation of Transmission Commodity Costs
6	Allocation of Distribution Costs
7	Cost of Service by Functions and Classification Thereof

TRANSCONTINENTAL GAS PIPE LINE CORPORATION

5363 Schedule 1

COMPARISON OF ALLOCATED COST OF SERVICE WITH REVENUES
YEAR 1960

Line No.	Rate Schedule (1)	Annual Billing Demands(a) (2)	Annual Gas Deliveries(a) (3)	Annual Revenues (4)	Allocated Cost of Service (5)	Excess or (Deficiency) in Revenue (6)
1	Sales for Resale					
2	CD-3	9,550,956	286,075,300(b)	$ 98,318,807(b)	$ 104,532,695	$(6,213,888)
3	CD-2	1,758,756	45,131,300	14,797,507	15,824,182	(1,026,675)
4	CD-1	348,000	7,157,200	2,273,948	2,449,477	(175,529)
5	G-3	24,200	423,700	184,744	195,796	(11,052)
6	G-2	455,190	8,542,500	3,259,184	3,476,016	(216,832)
7	G-1	368,250	4,738,800	1,883,503	2,025,081	(141,578)
8	ACQ-3	-	10,000,000	3,081,000	2,655,782	425,218
9	PS-2	306,636	1,259,110	915,458	991,494	(76,036)
10	X-20 Sales	-	912,500	228,125	242,339	(14,214)
11	Total Sales for Resale	12,811,988	364,240,410	124,942,276	132,392,862	(7,450,586)
12	Direct Sales - Zone 2	60,000	9,040,000	2,662,300	2,456,767	205,533
13	" Zone 1	-	1,692,000	524,520	415,519	109,001
14	Total Direct Sales	60,000	10,732,000	3,186,820	2,872,286	314,534
15	Total Sales	12,871,988	374,972,410	128,129,096	135,265,148	(7,136,052)
16	Transportation					
17	X-1	-	6,700,000	1,474,000	757,555	716,445
18	X-11	240,000	7,300,000	1,706,390	1,542,996	163,394
19	X-19	-	8,067,600	1,194,005	831,511	362,494
20	X-20	600,000	17,337,500	4,136,856	3,754,314	382,542
21	Total Transportation	840,000	39,405,100	8,511,251	6,886,376	1,624,875
22	Storage					
23	LS	2,235,000	13,762,500(f)	6,014,625	6,702,664	(688,039)
24	S-2	- (d)	- (c)	4,682,659(c)	4,682,659	-
25	Total Storage	2,235,000	13,762,500(f)	10,697,284	11,385,323	(688,039)
26	Total	15,946,988	414,377,510(e)(f)	$ 147,337,631(e)	$ 153,536,847	$(6,199,216)
27	Reference	Exhibit 17 Page 2	Exhibit 17 Page 2	Exhibit 17 Page 2	Schedule 2	

Notes: (a) Mcf at 14.7 psia.
(b) Includes Rate Schedule S-2 volumes of 11,993,700 Mcf and commodity revenue of $2,998,425.
(c) Excludes Rate Schedule S-2 volumes of 11,993,700 Mcf and commodity revenue of $2,998,425.
(d) Excludes billing demands of 1,637,424 Mcf under Rate Schedule S-2 since revenues equal cost of service.
(e) Excludes gas transported for Tennessee Gas Transmission Company under Rate Schedule X-15 and revenues from such service of $200,000 which were credited to the total cost of service.
(f) Gas volumes delivered under Rate Schedule LS are excluded from the total deliveries because such volumes are included in sales under Rate Schedule CD-3.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION

SUMMARY OF ALLOCATED COST OF SERVICE
YEAR 1960

Line No.	Particulars (1)	Gas Purchased For Sales (2)	Purchased Gas Expenses (3)	Production and Gathering Costs (4)	Transmission Costs Demand (5)	Transmission Costs Commodity (6)	Distribution Costs (7)	Texas Eastern Storage (8)
1	Sales for Resale							
2	CD-3 (a)	$ 41,174,815	$ 403,751	$ 2,050,857	$ 28,557,350	$ 31,387,875	$ 958,047	$
3	CD-2	6,495,748	63,696	323,544	4,239,604	4,500,448	151,142	
4	CD-1	1,030,136	10,101	51,310	691,824	742,137	23,969	
5	G-3	60,983	598	3,037	83,271	45,488	1,419	
6	G-2	1,229,522	12,056	61,241	1,292,739	851,850	28,605	
7	G-1	682,055	6,688	33,972	861,336	465,160	15,870	
8	ACQ-3	1,439,300	14,114	71,689		1,097,190	33,489	
9	PS-2	181,224	1,777	9,026	669,693	125,557	4,217	
10	X-20	131,336	1,288	6,540		100,119	3,050	
11	Total Sales for Resale	52,425,119	514,069	2,611,216	36,445,817	39,176,824	1,219,317	
12	Direct Sales - Zone 2	1,301,127	12,759	64,807	146,340	901,460	30,274	
13	- Zone 1	243,530	2,388	12,130		151,805	5,666	
14	Total Direct Sales	1,544,657	15,147	76,937	146,340	1,053,265	35,940	
15	Total Sales	53,969,776	529,216	2,688,153	36,592,157	40,230,089	1,255,257	
16	Transportation							
17	X-1					735,117	22,438	
18	X-11				717,600	800,949	24,447	
19	X-19					804,493	27,013	
20	X-20				1,793,999	3,703,253	58,068	
21	Total Transportation				2,511,599	1,242,812	131,966	
22	Storage							
23	LS							
24	S-2							4,6
25	Total Storage							4,6
26	Total	$ 53,969,776	$ 529,216	$ 2,688,153	$ 39,103,756	$ 44,472,901	$ 1,387,722	$ 4,6
27	Reference	Schedule 3	Schedule 3	Schedule 3	Schedule 4	Schedule 5	Schedule	Sched

Note: (a) Includes Rate Schedule S-2 volumes of 11,993,700 Mcf.

Schedule 2

Commodity (6)	Distribution Costs (7)	Texas Eastern Storage (8)	Leidy Storage (9)	Total Costs (10)
4,387,275	$ 958,047	$	$	$ 104,538,695
1,500,448	151,142			15,824,182
642,137	23,969			2,443,477
45,483	1,419			195,796
351,350	28,606			3,476,016
485,180	15,970			2,025,081
1,037,190	33,483			2,655,782
125,557	4,217			991,494
100,119	3,056			242,339
8,176,824	1,249,817			132,392,862
901,460	30,874			2,456,767
151,805	5,066			415,519
1,053,265	35,940			2,872,286
9,230,089	1,285,757			135,265,148
735,117	22,438			777,555
500,943	24,447			1,542,996
804,493	27,018			831,511
902,253	58,062			3,754,314
2,942,812	131,965			6,886,376
			6,702,664	6,702,664
		4,682,659		4,682,659
		4,682,659	6,702,664	11,385,323
20,349,725	$ 1,387,722	$ 4,682,659	$ 6,702,664	$ 153,535,847
Schedule 5	Schedule 6	Schedule 7	Schedule 7	

TRANSCONTINENTAL GAS PIPE LINE CORATION

ALLOCATION OF COST OF GAS PURCHASED SALES, PURCHASED GAS EXPENSES AND PRODUCTION ANDTHERING COSTS
YEAR 1960

Line No.	Particulars (1)	Anl Gasles (Mcf @ 7 Psia)	Cost of Gas Purchased For Sales (3)	Purchased Gas Expenses (4)	Production and Gathering Costs (5)
1	Sales for Resale				
2	CD-3	286,,300(a)	$ 41,174,815	$ 403,751	$ 2,050,857
3	CD-2	45,,300	6,495,748	63,696	323,544
4	CD-1	7,,200	1,030,136	10,101	51,320
5	G-3	,700	60,983	598	3,037
6	G-2	8,,500	1,229,522	12,056	61,241
7	G-1	4,,800	682,055	6,688	33,972
8	ACQ-3	10,,000	1,439,300	14,114	71,689
9	PS-2	1,,110	181,224	1,777	9,026
10	X-20	,500	131,336	1,288	6,540
11	Total Sales for Resale	364,,410	52,425,119	514,269	2,611,216
12	Direct Sales - Zone 2	9,,000	1,301,127	12,759	64,807
13	- Zone 1	1,,000	243,530	2,388	12,130
14	Total Direct Sales	10,,000	1,544,657	15,147	76,937
15	Total Sales	374,,410	$ 53,969,776	$ 529,416	$ 2,688,153
16	Average Cost per Mcf		14.3929¢	.1411¢	.7168¢

Note: (a) Includes Rate Schedules S-2 volumes of 1,,3,700 Mcf.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION

ALLOCATION OF TRANSMISSION COMMODITY COSTS
YEAR 1960

Line No.	Particulars (1)	Annual Gas Deliveries MCF @ 14.7 PSIA (2)	Algebraic Formula For Transmission Commodity Cost(a (3)
1	CD-3	286,075,300(c)	$Y
2	CD-2	45,131,300	Y - $ 0.01
3	CD-1	7,157,200	Y - 0.02
4	G-3	423,700	Y
5	G-2	8,542,500	Y - 0.01
6	G-1	4,738,800	Y - 0.02
7	ACQ-3	10,000,000	Y
8	PS-2	1,259,110	Y - 0.01
9	X-20 - Sales	912,500	Y
10	Direct Industrial Sales-Zone 2	9,040,000	Y - 0.01
11	-Zone 1	1,692,000	Y - 0.02
12	X-1	6,700,000	Y
13	X-11	7,300,000	Y
14	X-19	8,067,600	Y - 0.01
15	X-20	17,337,500	Y
16	Total	414,377,510	

Notes: (a) Assume Y = CD-3 Commodity Cost

(b) Determination of Value of Y:

$$414,377,510Y - \$ 992,165 = \$ 44,472,901$$
$$414,377,510Y = \$ 45,465,066$$
$$Y = \$ 0.1097190$$

(c) Includes S-2 Volumes of 11,993,700 MCF.

Transmission Commodity MCF Factor Col. 2 Times Col. 3 (4)			Transmission Commodity Cost Subsititutin $0.1097190(b) For Y in Col. 4 (5)
$ 286,075,300Y	-	$	$ 0.1097190
45,131,300Y	-	451,313	0.0997190
7,157,200Y	-	143,144	0.0897190
423,700Y			0.1097190
8,542,500Y	-	85,425	0.0997190
4,738,800Y	-	94,776	0.0897190
10,000,000Y			0.1097190
1,259,110Y	-	12,591	0.0997190
912,500Y			0.1097190
9,040,000Y	-	90,400	0.0997190
1,692,000Y	-	33,840	0.0897190
6,700,000Y			0.1097190
7,300,000Y			0.1097190
8,067,600Y	-	80,676	0.0997190
17,337,500Y			0.1097190
$ 414,377,510Y	-	$ 992,165	

Schedule 5

ion Commodity Factor imes Col. 3 (4)	Transmission Commodity Cost Subsititüting $0.1097190(b) For Y in Col. 3 (5)	Transmission Commodity Cost Col. 2 Times Col. 5 (6)
OY - $	$ 0.1097190	$ 31,387,875
OY - 451,313	0.0997190	4,500,448
OY - 143,144	0.0897190	642,137
OY	0.1097190	46,488
OY - 85,425	0.0997190	851,850
OY - 94,776	0.0897190	425,160
OY	0.1097190	1,097,190
OY - 12,591	0.0997190	125,557
OY	0.1097190	100,119
OY - 90,400	0.0997190	901,460
OY - 33,840	0.0897190	151,805
OY	0.1097190	735,117
OY	0.1097190	800,949
OY - 80,676	0.0997190	804,493
OY	0.1097190	1,902,253
OY - $ 992,165		$ 44,472,901

Schedule 6

TRANSCONTINENTAL GAS PLPE LINE CORPORATION

ALLOCATION OF DISTRIBUTION COSTS
YEAR 1960

Line No.	Particulars (1)	Annual Gas Deliveries (MCF @ 14.7 PSIA) (2)	Distribution Costs (3)
1	CD-3	286,075,300(a)	$ 958,047
2	CD-2	45,131,300	151,142
3	CD-1	7,157,200	23,969
4	G-3	423,700	1,419
5	G-2	8,542,500	28,608
6	G-1	4,738,800	15,870
7	ACQ-3	10,000,000	33,489
8	PS-2	1,259,110	4,217
9	X-20	912,500	3,056
10	Direct Sales - Zone 2	9,040,000	30,274
11	- Zone 1	1,692,000	5,666
12	X-1	6,700,000	22,438
13	X-11	7,300,000	24,447
14	X-19	8,067,600	27,018
15	X-20	17,337,500	58,062
16	Total	414,377,510	$ 1,387,722
17	Average cost per Mcf		0.334893¢

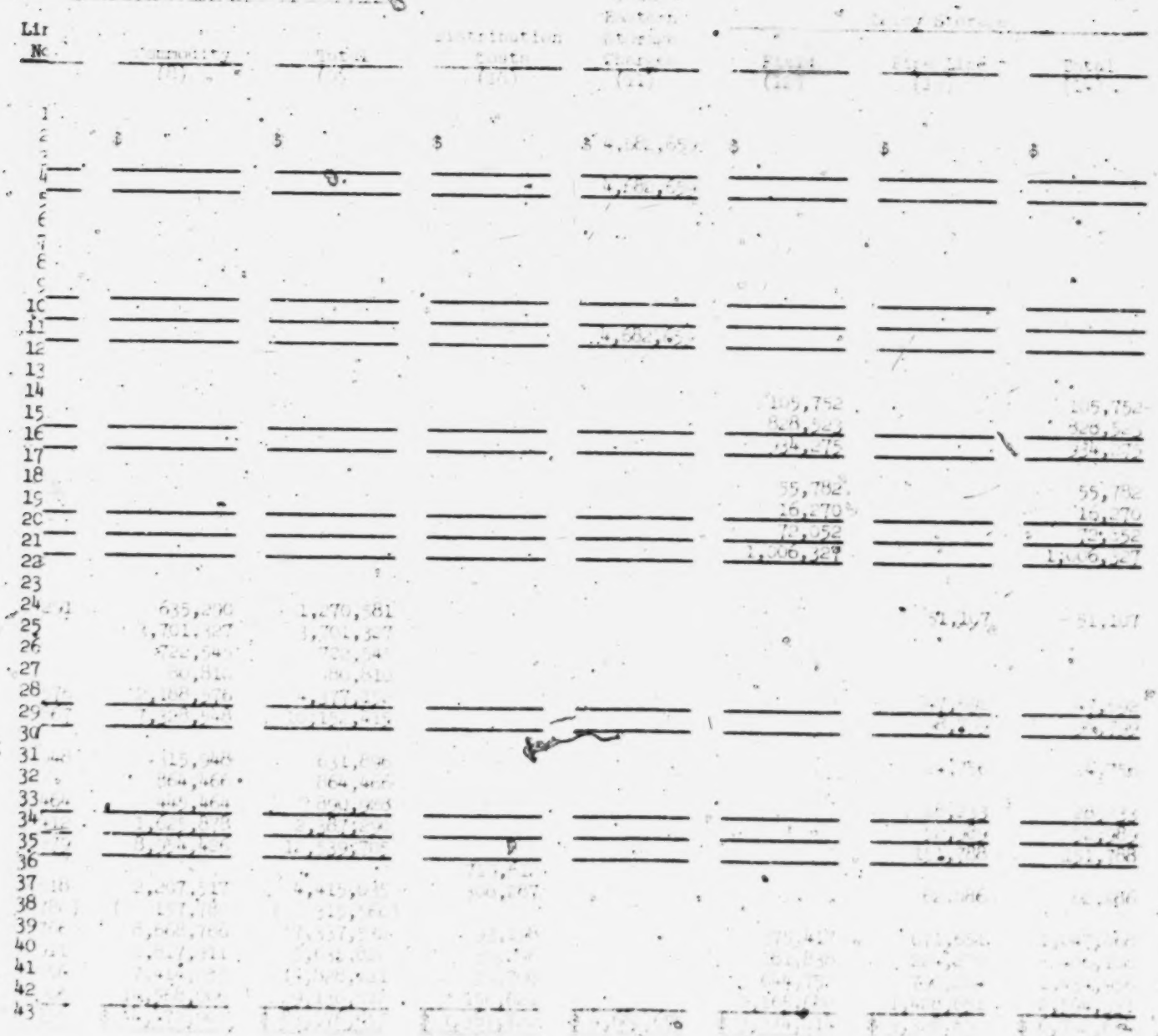
NOTE: (a) Includes Rate Schedule S-2 volumes of 11,993,700 Mcf.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION

COST OF SERVICE BY FUNCTIONS AND CLASSIFICATION TOTALS

YEAR 1961

Line No.	Description	Total Cost of Service	Cost of Gas Purchased for Resale	Purchased Gas Expenses	Production & Gathering Cost	Per Cost Classified Demand					
	(1)	(2)	(3)	(4)	(5)	(6)					
1	Production and Gathering Expenses:										
2	Gas Purchase for Sales	$ 58,652,435	$ [illegible]	$	$		$	$	$	$	
3	Purchased Gas Expense	[illegible]		[illegible]							
4	Total	[illegible]	[illegible]	[illegible]							
5	Production and Gathering - Operation										
6	Field Compressor Station Fuel	52,876			52,876						
7	Dehydrator Fuel	21,150			21,150						
8	All Other Production - Operation	1,087,866			1,087,866						
9	Production and Gathering - Maintenance	210,143			210,143						
10	Total	1,372,035			1,372,035						
11	Total Production and Gathering	60,375,458	[illegible]	[illegible]	1,372,035						
12	Underground Storage Expenses:										
13	Operation										
14	Compressor Station Fuel	105,752									
15	All Other Storage Operation	828,523									
16	Total Storage Operation	934,275									
17	Maintenance										
18	Maintenance of Compressor Equipment	55,782									
19	All Other Storage Maintenance	16,270									
20	Total Storage Maintenance	72,052									
21	Total Underground Storage Expenses	1,006,327									
22	Transmission Expenses:										
23	Operation										
24	Supervision and Engineering	1,321,688				50	[illegible]	[illegible]	[illegible]		
25	Compressor Station Fuel	3,701,327						[illegible]	[illegible]		
26	Other Compressor Station Expense	722,545						[illegible]	[illegible]		
27	Odorization Expense	80,810						[illegible]	[illegible]		
28	All Other Transmission Operation	[illegible]						[illegible]	[illegible]		
29	Total Transmission Operation	[illegible]						[illegible]	[illegible]		
30	Maintenance										
31	Supervision and Engineering	[illegible]				50	[illegible]	[illegible]	[illegible]		
32	Compressor Station Equipment	[illegible]						[illegible]	[illegible]		
33	All Other Transmission Maintenance	[illegible]				50	[illegible]	[illegible]	[illegible]		
34	Total Transmission Maintenance	[illegible]						[illegible]	[illegible]		
35	Total Transmission Expenses	[illegible]						[illegible]	[illegible]		
36	Distribution Expenses	[illegible]									
37	Administrative and General Expenses	[illegible]		[illegible]	[illegible]	50	[illegible]	[illegible]	[illegible]		
38	Other Gas Revenues - Credit	[illegible]			[illegible]						
39	Depreciation Expense	[illegible]			[illegible]						
40	Taxes, Other Than Federal Income	[illegible]			[illegible]						
41	Federal Income Tax	[illegible]			[illegible]						
42	Return	[illegible]			[illegible]						
43	Total Cost of Service	[illegible]	[illegible]	[illegible]	[illegible]						



5370

Schedule 7
Page 2 of 2

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
FOOTNOTES TO SCHEDULE 7, PAGE 1

NOTES:

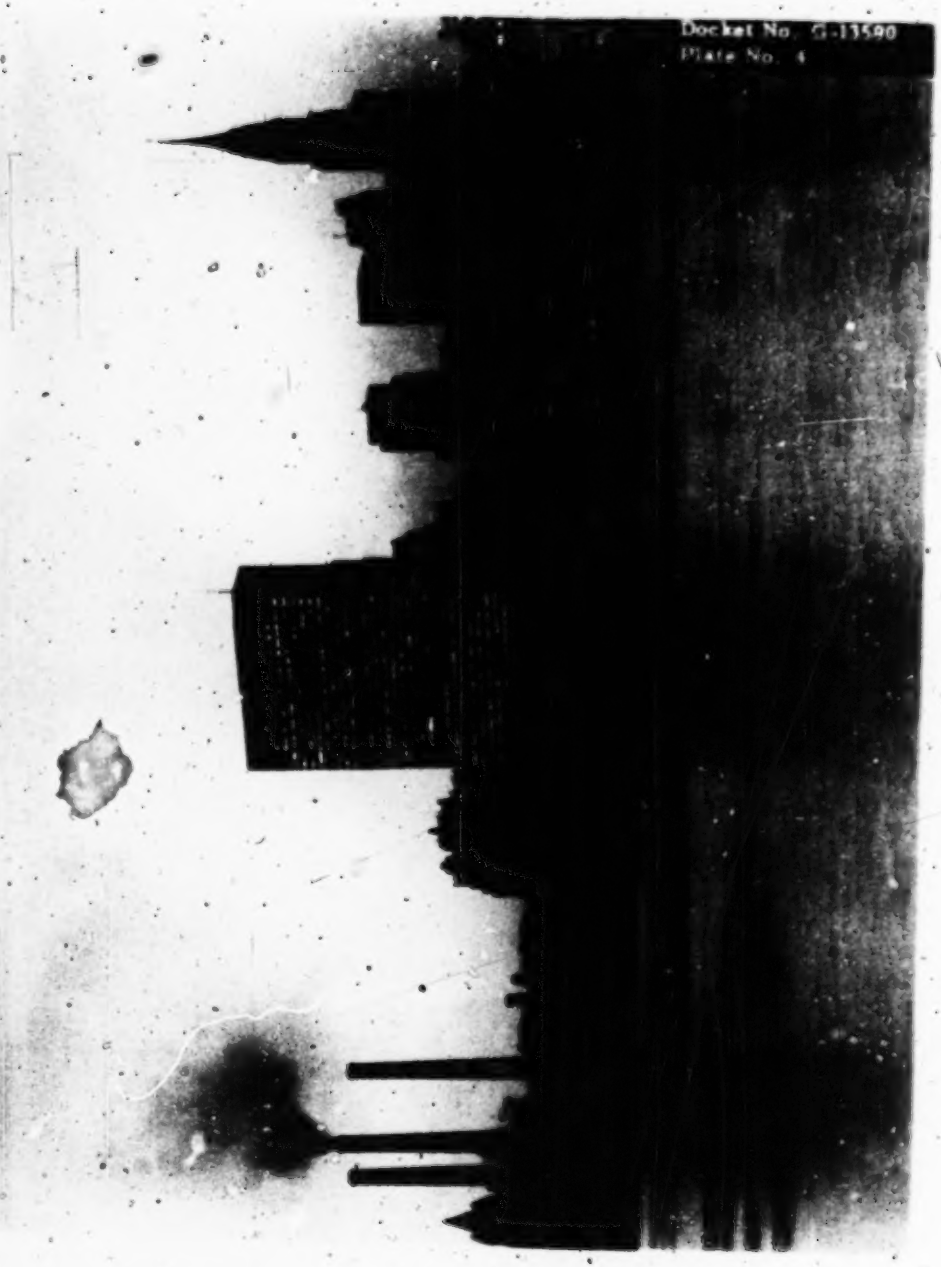
(a) Total cost of service, Schedule 7, Page 1, Column 2 was taken from Page 1 of Section 3 of Exhibit 18.

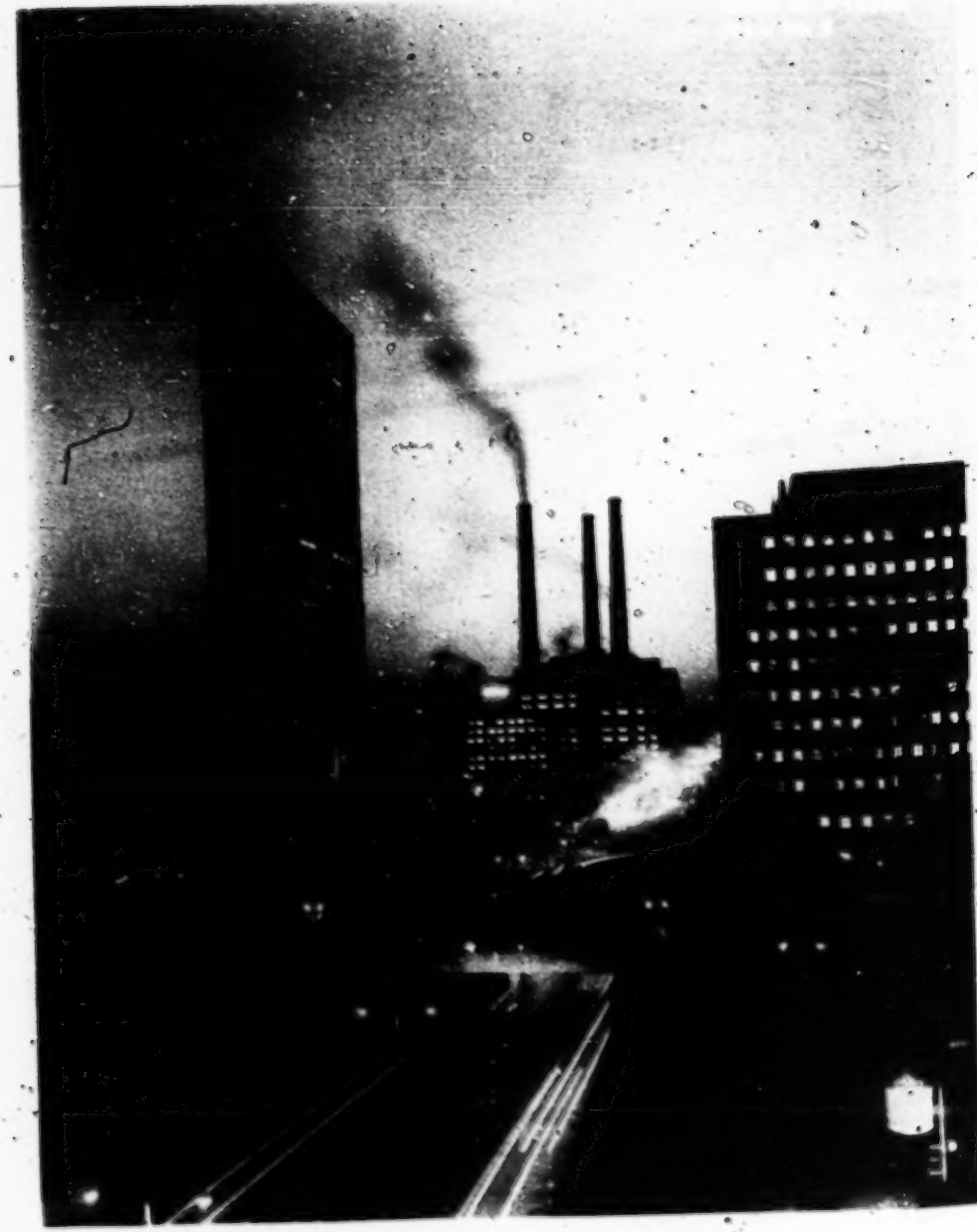
(b) Administrative and General Expenses, Line 37 of Schedule 7, Page 1 were assigned to functions in proportion to direct labor expense.

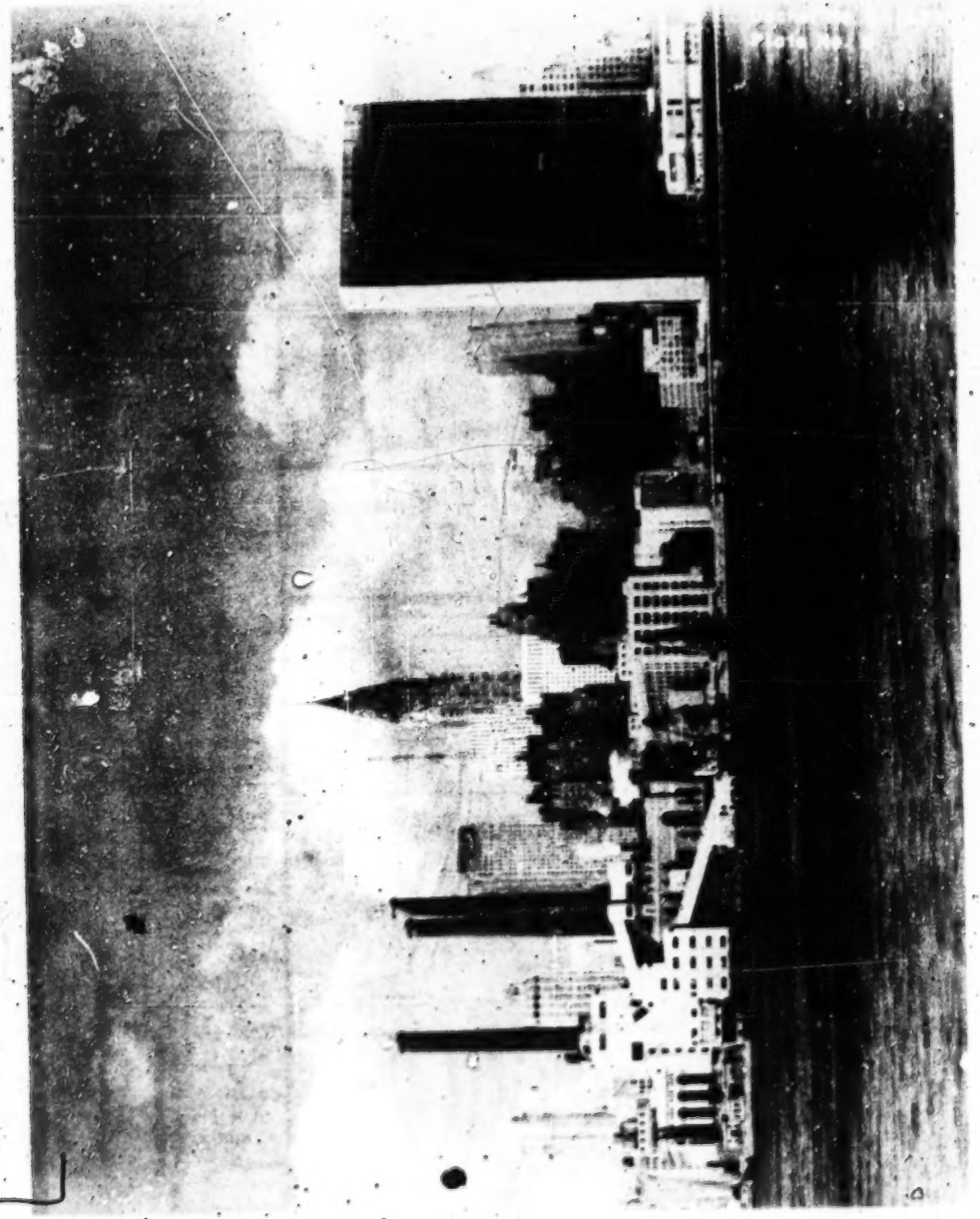
(c) Other gas revenues (credit) Line 38, Schedule 7, Page 1 were assigned to the functions from which revenues are derived.

(d) Depreciation expense, taxes and return on Lines 39, 40, 41 and 42, respectively, on Schedule 7, Page 1 were assigned to functions in proportion to average plant in service.

134a

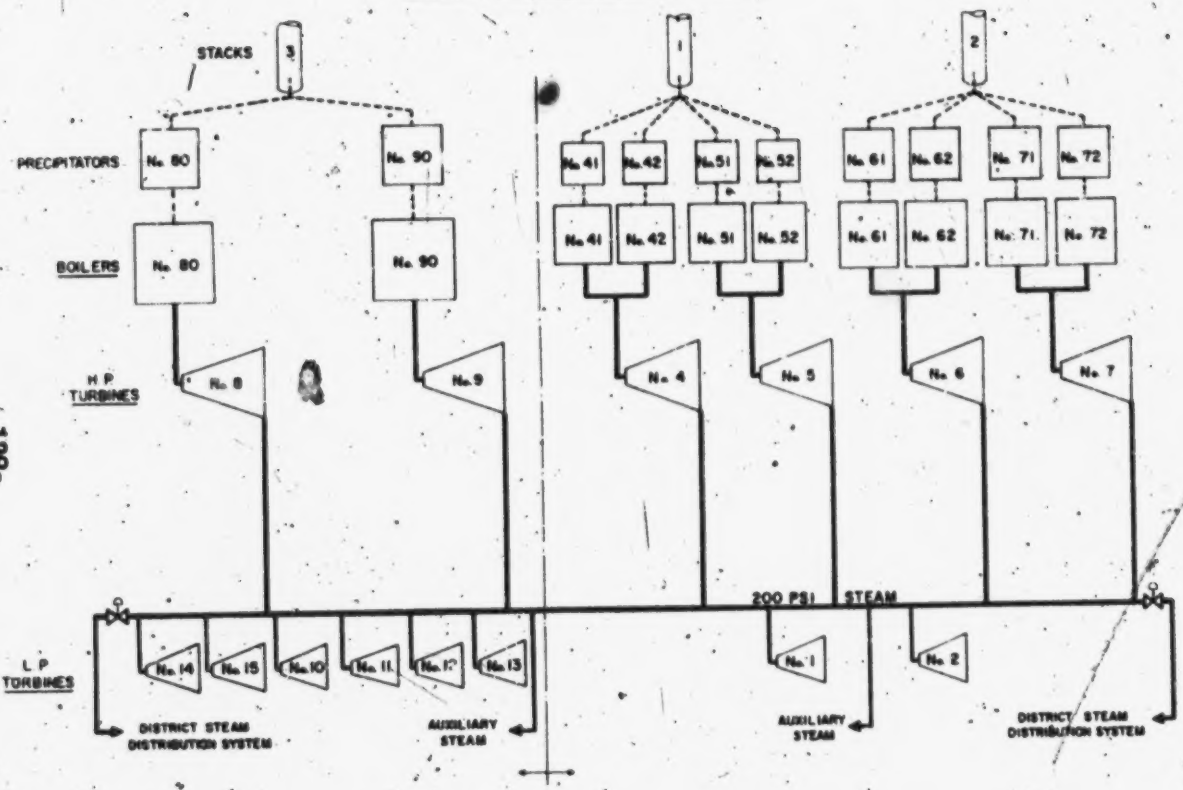

Docket No. G-13590
Plate No. 4





WATERSIDE STATIONS

SIMPLIFIED DIAGRAM OF STEAM SYSTEM



138a

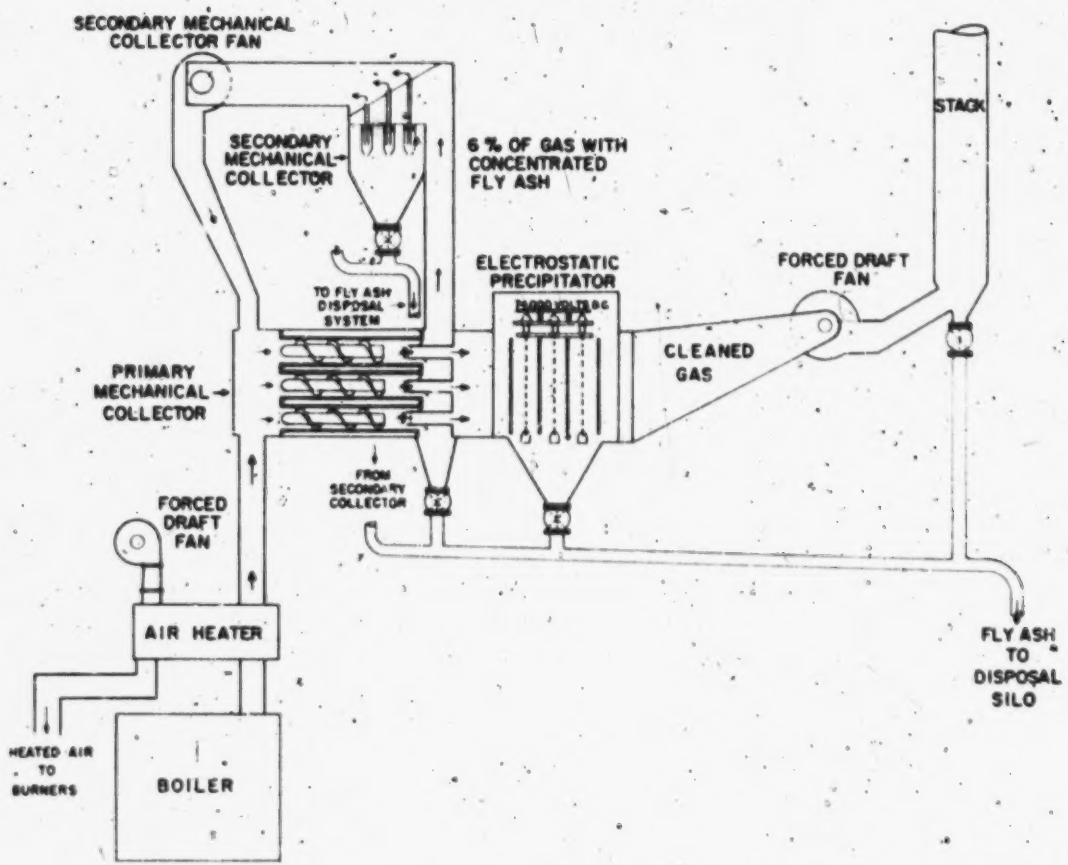
5203

DOCKET NO G-13590
PLATE NO 7

COMBINED MECHANICAL DUST COLLECTOR

COMBINED MECHANICAL DUST COLLECTOR AND ELECTROSTATIC PRECIPITATOR

(WATERSIDE UNITS 6 & 7)



5819 DOCKET NO G-13590 PLATE NO 8

Consolidated Edison Company of New York, Inc.

DUST EMISSION IN POUNDS PER HOUR AT AVERAGE ANNUAL BOILER OUTPUT

WATERSIDE STATION

	All Boilers Burning Coal				Boilers 71-72 on Gas All Others Burning Coal		All Eight Boilers on Stacks 1 & 2 on Gas - Stack 3 Boilers on Coal	
	Coal Burned Lb/Hr	Per Cent of Ash and Unburned Carbon Recovered	Fly Ash to Stack	Carbon Included in Fly Ash	Fly Ash to Stack	Carbon Included in Fly Ash	Fly Ash to Stack	Carbon Included in Fly Ash
Stack 2								
Boilers 71 - 72	60 300	89.5	642	218	0	0	0	0
" 61 - 62	73 000	98.1	122	15	122	15	0	0
Total	**141 300**	**94.0**	**764**	**233**	**122**	**15**	**0**	**0**
Stack 1								
Boilers 51 - 52	35 900		89	13	89	14	0	0
" 41 - 42	48 900		100	15	100	15	0	0
Total	**84 200**	**97.5**	**189**	**28**	**189**	**29**	**0**	**0**
Stack 3								
Boiler 60	76 100		67	3	67	3	67	3
" 90	74 200		101	5	101	5	101	5
Total	**152 300**	**98.7**	**168**	**8**	**168**	**8**	**168**	**8**
Total Waterside	**377 800**	**98.7**	**1121**	**269**	**479**	**52**	**168**	**8**
% Reduction by use of Gas					578	815	858	978

EAST RIVER STATION

	All Boilers Burning Coal				Boilers 1-9 on Oil & Gas, Others on Coal	
	Coal Burned Lb/Hr	Per Cent of Ash and Unburned Carbon Recovered	Fly Ash to Stack	Carbon Included in Fly Ash	Fly Ash to Stack	Carbon Included in Fly Ash
Stack 1						
Boilers 1 and Part of 3			68	21	0	0
" 2 " " " 4			43	18	0	0
" 5 " " " 3			92	37	0	0
" 6 " " " 4			50	22	0	0
Total	**58 500**	**94.9**	**253**	**98**	**0**	**0**
Stack 2						
Boilers 7-8-9			767	115	0	0
Total	**91 100**	**90.5**	**767**	**115**	**0**	**0**
Stack 3						
Boiler 50			206	17	206	17
" 60			327	17	327	17
Total	**148 500**	**96.0**	**533**	**34**	**533**	**34**
Stack 4						
Boiler			199	6	199	6
Total	**88 500**	**97.3**	**199**	**6**	**199**	**6**
Total East River	**376 600**	**94.6**	**1752**	**253**	**732**	**40**

1408

5420

Docket No. 1-17478
Exhibit No. 1

Consolidated Edison Company of New York, Inc.

WINTER SEASON PEAK-DAY SENDOUTS
MMCF

	ACTUAL		
	1954-55	1955-56	1956-57
Day of Maximum Sendout	February 3	December 21	January 15
Average Temperature	8° F	13° F	14° F
Total Sendout	213.9	229.1	240.4

Estimated Division of Sendout on 0° F Day by Type of Use for Past Years

	1954-55	1955-56	1956-57
Residential Non-Space Heating	37	36	36
Residential Space Heating	100	108	123
General	83	86	89
Public Authorities	4	4	5
Company Use	3	3	2
Unaccounted For	15	15	15
Total	242	252	270

Estimated Division of Sendout on 0° F Day by Type of Use for Future Years

	1958-59	1959-60	1960-61
Residential Non-Space Heating	33	33	32
Residential Space Heating	165	186	208
General	100	103	107
Public Authorities	5	6	6
Company Use	1	1	1
Electric & Steam Production	25	25	25
Unaccounted For	16	16	16
Total	345	370	395

141a

5413

Docket No. C-13590
Plate No. 12

Consolidated Edison Company of New York, Inc.

PEAK DAY REQUIREMENTS AND SUPPLY
MMCF AT 14.7 PSIA

Line No.		1954-55	1955-56	1956-57	1958-59	1959-60	1960-61	Line No.
	Present Firm Supply							
1	Transco CD 3	138.6	143.7	143.7	143.7	143.7	143.7	1
2	Tennessee CD 5	-	25.6	25.6	25.6	25.6	25.6	2
3	Manufactured Gas Plants	178.6	178.7	160.3	121.3	70.3	70.3	3
4	Transco LTF	2.0	4.1	1.7	-	-	-	4
5	X-18	-	-	24.0	-	-	-	5
6	Total Present Firm Supply	**319.2**	**352.1**	**355.3**	**290.6**	**239.6**	**239.6**	6
7	Peak Day Requirements	**242.0**	**252**	**270**	**345.0**	**370.0**	**395.0**	7
8	Spare Capacity	**77.2**	**100.1**	**85.3**	-	-	-	8
9	Minimum New Supply Needed	-	-	-	**54.4**	**130.4**	**155.4**	9
	Proposed Additional Supply G-13590							
10	Storage	-	-	-	-	50	50	10
11	X-20	-	-	-	50	50	50	11
12	Additional X-20 Contracted for	-	-	-	-	35	35	12
13	Sum	-	-	-	**50**	**115**	**115**	13
14	Remaining New Supply Needed	-	-	-	4.4	15.4	40.4	14
	Additional Purchases Planned							
15	Storage	-	-	-	-	30	30	15
16	X-20	-	-	-	-	35	35	16
17	Sum	-	-	-	-	**65**	**65#**	17

In addition 10 MMCF/day firm CD gas will be required to meet the requirements in a cold winter.

142a

5414

Docket No. G-13590
Plate No. 13

Consolidated Edison Company of New York, Inc.

CAPITAL SAVINGS AT WATERSIDE STATION TO BE EFFECTED THROUGH USE OF "X-20" NATURAL GAS
(From Plate No. 19)

Cost Without Natural Gas		
Replacement of Two Boilers for Smoke Control including Associated Equipment		
Total		$12,000,000
Cost With 50 MMCF Per Day of "X-20" Natural Gas		
Conversion of Eight Boilers to Gas Firing	$1,850,000	
Installation of High Pressure Main	500,000	
Total		2,350,000
Capital Savings Through Use of "X-20" Natural Gas		$ 9,650,000

1438

5421

(Docket No. G-13550)
Plate No. 20

Consolidated Edison Company of New York, Inc.

OPERATING SAVINGS THAT WILL RESULT FROM USE
OF 50 MMCF PER DAY OF "X-20" NATURAL GAS
1958-59

	Without X-20 Gas	With X-20 Gas	Saving
Gas System			
Materials	$ 3,300,000	$ 2,070,000	$ 1,230,000
Labor	720,000	610,000	110,000
Testing	490,000	410,000	80,000
Total	4,510,000	3,090,000	1,420,000
Electric System			
Fuel for Electric Stations	7,460,000	7,060,000	400,000
Total - Gas and Electric	11,970,000	10,150,000	1,820,000

144a

5426

Docket No. G-13500
Plate No. 22

Long Island Lighting Company

METHOD OF GAS SUPPLY ON DAY OF MAXIMUM SENDOUT
EXPERIENCED 1954-55 THROUGH 1956-57 - FORECASTED 1957-58 THROUGH 1962-63

		Experienced			Forecasted					
		1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62	1962-63
	Natural Gas - Contract Demand Quantity*	35,679	41,290	46,070	66,592	85,570	95,570	110,570	110,570	110,570
(A)	Carbureted Water Gas	3,592	5,799	5,130	9,100	-	-	-	-	-
(B)	Catalytically Reformed Natural Gas	14,074	16,227	17,540	12,700	-	-	-	-	-
(C)	Catalytically Reformed Liquid Petroleum	0	1,025	3,860	2,700	15,400	20,400	20,400	20,400	20,400
(D)	Liquid Petroleum-Air Gas	0	0	525	7,386	8,808	10,300	10,300	10,300	10,300
(E)	Oil Gas	1,436	1,487	3,500	7,000	7,000	7,000	7,000	7,000	7,000
(F)	Natural Gas	24,155	29,010	25,952	54,114	85,792	95,792	110,792	110,792	110,792
(G)	Holder Drawdown	2,294	(442)	73	-	-	-	-	-	-
(H)	DEFICIENCY	0	0	0	0	0	7,508	17,508	41,508	66,508
(I)	System Total Sendout in Terms of Equivalent 1,000 BTU/Cu.Ft. Gas	45,561	53,106	62,586	93,000	117,000	141,000	166,000	190,000	215,000
(J)	Average Temperature-°F	8	13	10	0	0	0	0	0	0
(K)	Degree-Days	57	52	55	65	65	65	65	65	65
(L)	Wind Velocity-MPH(Average)	19.6	14.1	9.6	30	30	30	30	30	30
(M)	Date	2-3-55	12-21-55	1-15-57	-	-	-	-	-	-

* Daily Demand Quantities Under Contract or Precedent Agreement at February 1, 1958 - MCF Per Day

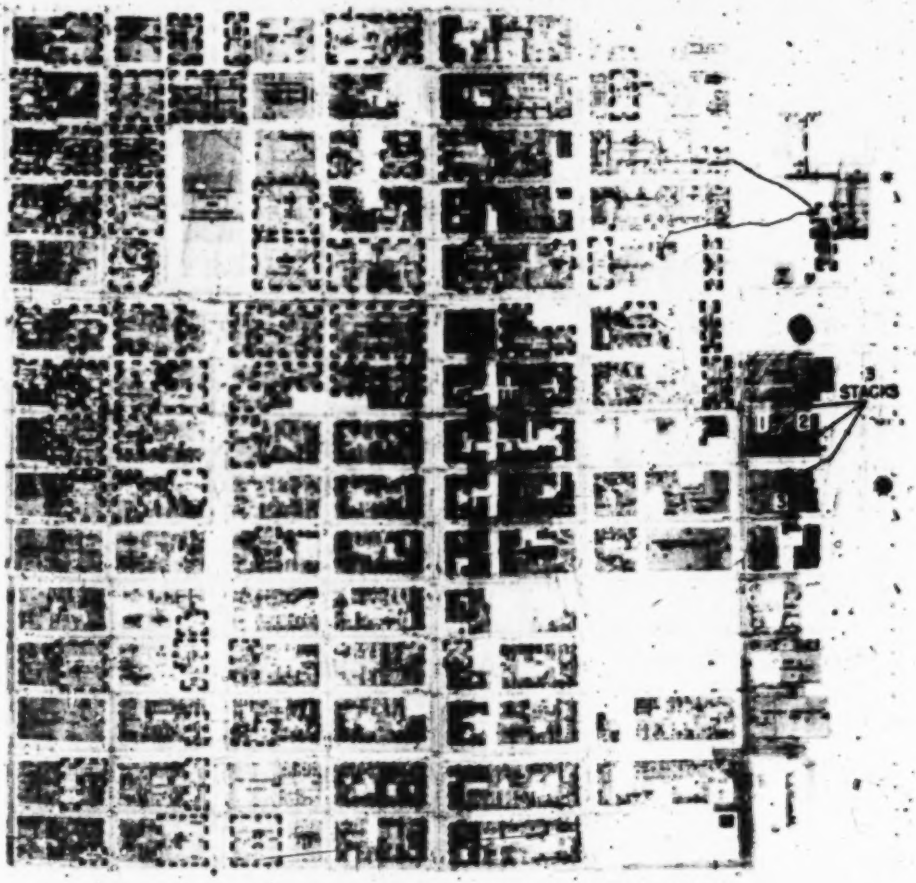
	1957-58	1958-59	1959-60	1960-61
Transcontinental CD-3	50,570	50,570	50,570	50,570
Transcontinental LTF-3	5,000	-	-	-
Tennessee CD-5	5,000	5,000	5,000	5,000
Transcontinental Additional - CD-3 or X-21	-	25,000	25,000	25,000
Tennessee SS-5	5,000	5,000	5,000	5,000
Transcontinental WPS	1,022	-	-	-
Transcontinental LS	0	0	10,000	25,000
Total	66,592	85,570	95,570	110,570

() Indicates negative value

DOCKET NO. 0-13580
EXHIBIT NO.

THE SOURCE OF MAPS - MANHATTAN LAND BOOK, CITY OF NEW YORK
G.W. BROMLEY & CO. INC. NEW YORK

PART OF SECTION 5 - PLATE 73 PART OF SECTION 3 & 5 - PLATE 67 PART OF SECTION 3 - PLATE 61
PART OF SECTION 5 - PLATE 74 PART OF SECTION 3 & 5 - PLATE 68 PART OF SECTION 3 - PLATE 62



BUILDINGS OUTLINED ARE 18 STORIES OR OVER 2-3-58

Consolidated Edison Company of New York, Inc.

ANNUAL NATURAL GAS USE AND SUPPLY
MMCF

Line No.	Supply	1955	1956	1957	1959	1960	1961	Line No.
1	Manufactured High BTu Oil Gas	2,207	563	287	1,100	0	0	1
2	Holder Variation	(15)	(23)	16		0	0	2
	Present Natural Gas Supply							
3	Transco CD-3	50,770	47,746	52,530	52,459	52,602	52,459	3
4	Transco "E"	893	425	1,006	0	0	0	4
5	Transco WPS			21	0	0	0	5
6	Transco LTF	1,069	818	2,086	0	0	0	6
7	Transco X-18		14	621	0	0	0	7
8	Tennessee CD-5	1,468	6,313	9,370	9,327	9,352	9,327	8
9	Interruptible	2,608	4,801	3,916	•	•	•	9
	Proposed Additional Natural Gas Supply							
10	X-20 (A)				18,250	31,110	31,025	10
11	X-20 (B)					12,810	12,775	11
12	Transco Storage Input				(3,300)	(2,270)	(2,360)	12
13	Tennessee Storage Input				(2,760)	(2,260)	(2,360)	13
14	Transco Storage Withdrawal				620	2,270	2,360	14
15	Tennessee Storage Withdrawal				610	2,260	2,360	15
16	Contract Demand						3,650	16
17	Total Supply	59,000	60,657	69,853	76,306	105,874	109,236	17
	Natural Gas Use							
18	Natural Gas Sales	33,922	37,171	38,000	43,980	46,560	49,660	18
19	Company Use	614	382	466	185	190	190	19
20	Electric & Steam Dept. Firm	-	-	-	16,770	43,060	42,700	20
21	Electric & Steam Dept. Interruptible	20,866	20,326	28,805	12,036	12,564	13,586	21
22	Unaccounted for	3,598	2,778	2,882	3,335	3,500	3,700	22
23	Total Use	59,000	60,657	69,853	76,306	105,874	109,236	23

(A) Gas Covered by Contracts in this proceeding
(B) Additional Gas Supply to be Negotiated
( ) Indicates Red
• No Estimate Available for Forecast Years

Docket No. G-13590
Plate No. 11
Revised 3/31/58

147a

6814

Excerpt from Exhibit 81, Section 7

TRANSCONTINENTAL GAS PIPE LINE CORPORATION

3100 Travis Street
P. O. Box 296
Houston 1, Texas
March 14, 1958

Consolidated Edison Company
of New York, Inc.
4 Irving Place
New York 3, New York

Gentlemen:

This is in reference and supplemental to the enclosed letter from Transcontinental to you dated March 14th, 1958.

You have informed us of certain problems affecting your need for gas which are, to some extent, peculiar to your Company. We therefore agree that if you accept the attached letter, the following special provisions relating to your particular needs will be deemed a part of said attached letter agreement as though fully set forth therein.

1. Transcontinental will prosecute in the FPC to conclusion, as expeditiously as possible, its pending application in Docket No. G-13,590 for the certification of the construction of a new pipe line crossing of the Hudson River near 72nd Street in New York City and for service to be rendered to you therefrom.

2. Transcontinental will prosecute to conclusions its pending applications in Dockets No. G-13,590 and G-13,793 for the certification of facilities necessary to furnish to you not less than 30,000 Mcf of storage service and for the services to be rendered to you thereby.

3. If Transcontinental receives certificates acceptable to it to construct the facilities and to render the services set forth in paragraphs 1 and 2 above, and is able to finance construction of the facilities so certificated on terms and conditions deemed by it to be reasonable, Transcontinental will promptly proceed to construct such facilities.

4. In the event that any of the facilities or services referred to in paragraph 1 or in paragraph 2 above, are not certificated by November 1, 1959 or Transcontinental is unable to finance or fails to construct any of such facilities within a reasonable time following such certification, this agreement

and the enclosed agreement dated March 14th, 1958 shall both terminate and be of no force and effect.

5. We recognize that a prime consideration for your acceptance of the enclosed letter and of this letter is your expectation of receiving from us the transportation service proposed in our pending application in FPC Docket No. G-13,590. We agree that if the certification of said transportation service is denied or if not certificated in form acceptable to you or Transcontinental by the FPC by May 1, 1959, then Transcontinental will promptly file with the Commission an application for the certification of the construction of facilities for the sale to you and for such sale under its CD-3 Rate Schedule then currently effective (or as such schedule may thereafter be superseded upon approval of the Federal Power Commission) of 50,000 Mcf of gas per day and if such certificate acceptable to Transcontinental is issued by the Commission, Transcontinental will promptly construct such facilities and make such sale to you.

6. We further understand the importance to your long-range program of the acquisition of additional gas to sup-

port your utility operations in New York City and adjacent territory, particularly the receipt from us of additional transportation service or CD-3 service, or both, in amounts up to an aggregate of 70,000 Mcf of gas per day on or before January 1, 1960. Reference is made to your letter of intent dated January 13, 1958, in which provision was made for the supply of additional transportation service in the amount of 35,000 Mcf per day, which letter of intent is superseded by the annexed letter of intent dated March 14th, 1958. This superseding letter of intent provides for an increase in the amount of transportation service of 15,000 Mcf per day and, at your election, additional transportation or CD-3 service, or both, in quantities aggregating not more than an additional 55,000 Mcf per day. If our application for a certificate for transportation service with respect to any amounts of such transportation service, which Con-Edison has elected to receive, is denied, is unacceptable to either of us, or is not granted in a reasonable time, then Transcontinental will, if requested by Con-Edison, promptly file with the Commission an application for the certification of necessary facilities and for the sale to you under its CD-3 Rate Schedule as then currently effective (or as such schedule may thereafter be superseded upon approval of the Federal Power Commission) of quantities of gas aggregating, but not exceeding, the quantity involved in the transportation service for which a certificate had been requested. If a certificate for any sale of CD-3 gas applied for pursuant hereto is issued by the Commission and is acceptable to Transcontinental and to Con-Edison,

Transcontinental will construct the necessary facilities and make such sale to you.

7. Transcontinental's failure to receive the certificates or construct the facilities and render the services referred

to in paragraphs 5 and 6 above shall not terminate the enclosed letter agreement dated March 14th, 1958 or this supplement thereto.

It is understood and agreed that the provisions contained in this supplemental agreement are in addition to and not in substitution for any of the terms and provisions of the enclosed letter agreement which continue in full force and effect. If, however, the main letter agreement shall terminate, then this agreement shall also terminate, but such termination shall not affect or terminate the attached letter of intent.

If you agree to the foregoing and to the enclosed letter which together represent our understanding, please so indicate at the place provided below and return an executed copy to us.

Very truly yours,

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
By JAMES B. HENDERSON
Vice President

AGREED TO the 17 day of March, 1958.

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

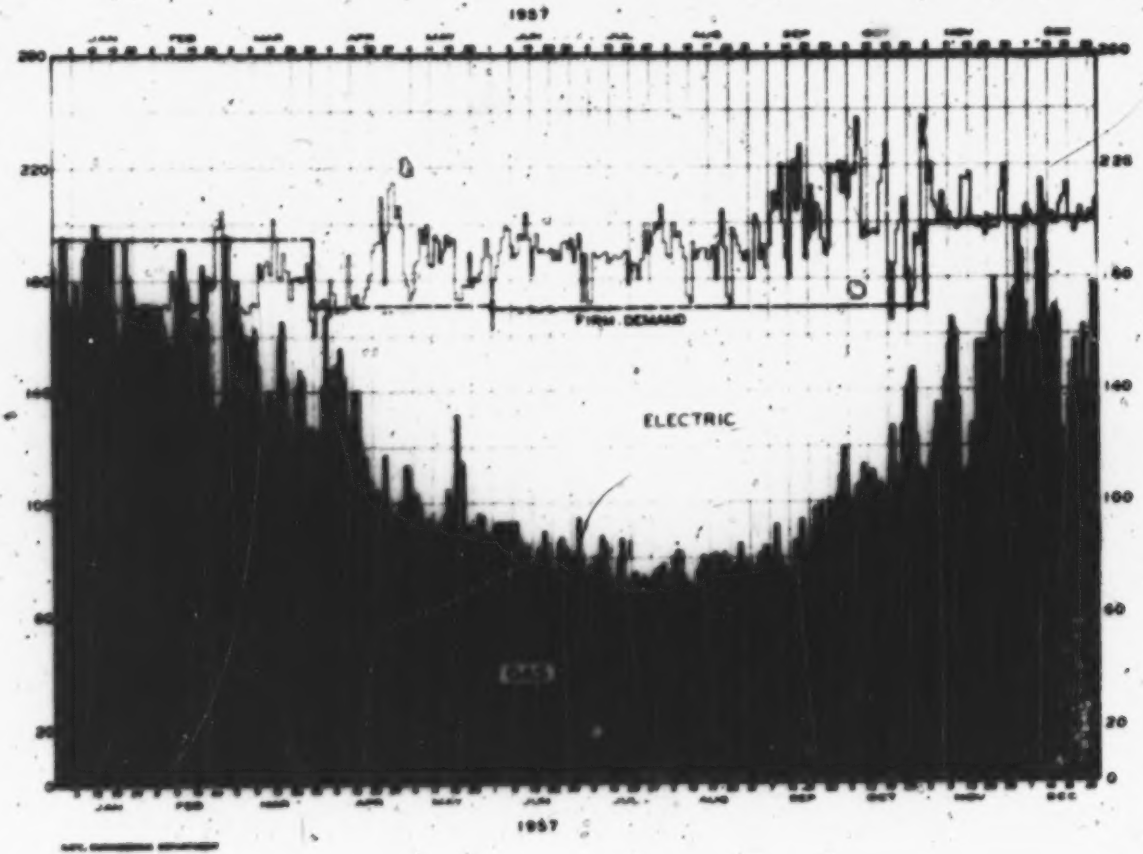
By R. F. BROWN
Vice President

6873

5/83

USE OF NATURAL GAS

MILLIONS OF CUBIC FEET DAILY - THRU DECEMBER 31, 1957



6874

RATE SCHEDULE CD-3
Contract Demand Service
Zone 3

1. AVAILABILITY

This rate schedule is available for the purchase from Transcontinental Gas Pipe Line Corporation (hereinafter referred to as Seller) of natural gas by any utility or gas distribution agency (hereinafter referred to as Buyer):

(a) the pipe line or distribution system of which connects with or can be made to connect with Seller's main transmission system between the Virginia-Maryland State Boundary and the termini of Seller's system in New York; and

(b) which has executed a service agreement with Seller for the purchase of natural gas under this rate schedule.

2. APPLICABILITY AND CHARACTER OF SERVICE

This rate schedule shall apply to all deliveries hereunder.

Delivery of natural gas under this rate schedule shall be on a firm basis and shall not be subject to curtailment or interruption except:

(a) That caused by force majeure or operating conditions beyond Seller's or Buyer's control, and

(b) Deliveries of gas to be used or resold for boiler fuel may be curtailed by Seller on an equitable basis when such gas is, in Seller's opinion, required by Seller for use in its underground storage facilities; provided, however, that the consumption of natural gas for boiler fuel in amounts up to 500 Mcf per day by any consumer shall be exempt from such curtailment and no such curtailment shall be made which will cause Buyer to

Sixth Revised Sheet No. 17-B

RATE SCHEDULE CD-3
Contract Demand Service
Zone 3
(Continued)

RECEIVED
NOV 16 3 52 PM '55
FEDERAL POWER COMMISSION

2. APPLICABILITY AND CHARACTER OF SERVICE (Continued)

receive less than 65 per cent of the maximum quantities of gas Buyer is entitled to purchase under this rate schedule, based upon the contract demand, during the current year.

Deliveries hereunder shall have priority over all deliveries made or to be made by Seller on an interruptible basis.

Departures from scheduled daily deliveries on account of variations due to the inability of Seller or Buyer to maintain precise control shall be kept to the minimum permitted by operating conditions and shall be balanced out as soon as practicable without exceeding the overrun limitations provided herein. The allowable variation on any day above or below the scheduled daily delivery because of such inability to maintain precise control shall be not more than 5 per cent.

3. RATE

For natural gas service rendered to Buyer each month under this rate schedule, Buyer shall pay Seller the sum of a Demand Charge and a Commodity Charge determined as follows:

Demand Charge: $2.806 per Mcf of Contract Demand

Commodity Charge: 25¢ per Mcf delivered

Issued by: Tom P. Walker, President
Issued on: November 15, 1955

Effective: October 1, 1955

RATE SCHEDULE G-1
General Service
Zone 1

1. AVAILABILITY

This rate schedule is available for the purchase from Transcontinental Gas Pipe Line Corporation (hereinafter referred to as Seller) of natural gas by any utility or gas distribution agency (hereinafter referred to as Buyer):

(a) whose maximum demand for natural gas does not exceed 5,000 Mcf during any day;

(b) the pipe line or distribution system of which connects with or can be made to connect with Seller's main transmission system between the discharge side of Seller's Compressor Station No. 5 located near Eunice, Louisiana, and the Georgia-South Carolina State Boundary; and

(c) which has executed a service agreement with Seller for the purchase of natural gas under this rate schedule.

2. APPLICABILITY AND CHARACTER OF SERVICE

This rate schedule shall apply to all natural gas delivered hereunder.

Delivery of natural gas under this rate schedule shall be on a firm basis and shall not be subject to curtailment or interruption except:

(a) That caused by force majeure or operating conditions beyond Seller's or Buyer's control, and

(b) Deliveries of gas to be used or resold for boiler fuel may be curtailed by Seller on an equitable basis when such gas is, in Seller's opinion, required by Seller for use in its underground storage facilities: provided, however, that the consumption of natural gas for boiler fuel in amounts up to 500 Mcf per day by any consumer shall be exempt from such curtailment and no such curtailment shall be made which will cause Buyer to receive less

RATE SCHEDULE G-1
General Service
Zone 1
(Continued)

2. APPLICABILITY AND CHARACTER OF SERVICE (Continued)

than 65 per cent of the maximum quantities of gas Buyer is entitled to purchase under this rate schedule during the current year.

Deliveries hereunder shall have priority over all deliveries made or to be made by Seller on an interruptible basis.

3. RATE

For all natural gas delivered to Buyer each month under this rate schedule, Buyer shall pay Seller the sum of a Demand Charge and a Commodity Charge determined as follows:

Demand Charge: $ 2.155 per Mcf of Billing Demand

Commodity Charge: 23¢ per Mcf delivered

4. BILLING DEMAND

The Billing Demand for any month shall be whichever of the following is the larger:

(a) The maximum daily delivery of natural gas on any day during the current billing month, or

(b) 80% of the highest Billing Demand during the twelve-month period ending with the current billing month;

provided that the Billing Demand for any month shall not be greater than Seller's maximum daily delivery obligation (contract demand) set forth in the service agreement.

Where the size and location of Buyer's load is such as not to warrant installation of meters having demand indication, at the sole option of the Seller, the maximum daily delivery for any month shall be taken to equal 1/15th of the Mcf taken during such month.

7129

JUL 13 1950

The President
The White House
Washington 25, D. C.

Dear Mr. President:

With your note of July 6, 1950, you enclosed Mayor O'Dwyer's letter to which was attached a letter from Trygve Lie, Secretary-General of the United Nations, making inquiry concerning the possible allotment of 175 million cubic feet of natural gas per day for the Consolidated Edison electric generating plant located just south of United Nations' Headquarters Building under construction at 42nd Street and First Avenue in New York City. Natural gas is to be supplied to the New York metropolitan area through a pipe line now under construction by Transcontinental Gas Pipe Line Corporation. It is expected that the pipe line will be completed and gas delivered to the New York City area late this fall. However, all but 82 million cubic feet per day out of the full capacity of the line has been dedicated to existing markets. Furthermore, Transcontinental Gas Pipe Line Corporation has a contract for the supply of 100 million cubic feet per day to the New England area which means that their present facilities will have to be expanded to provide an additional 18 million cubic feet if the company is to meet its obligation to supply 100 million cubic feet to New England.

The only means by which 175 million cubic feet of natural gas per day could be made available to Consolidated Edison for use in their electric generating plant in the vicinity of 42nd Street and First Avenue would be to construct what would amount to a new pipe line from the Gulf Coast area of Texas and Louisiana. It would be a

rather unique situation if the major capacity of a pipe line from the Gulf Coast area should be dedicated to the supplying of natural gas for boiler fuel in an electric generating plant when there is such an outstanding need for natural gas for domestic, commercial and superior industrial use.

It occurs to me that possibly Consolidated Edison is undertaking to promote its own interests when the matter of obnoxious gases, fumes and smoke might be eliminated by Consolidated Edison itself through the installation of proper controls and regulating equipment.

7130

The Commission is having the matter fully investigated and will advise you further at an early date.

Respectfully yours,

MON C. WALLGREN
Chairman

7131

AUG 21 195(

The President
The White House
Washington 25, D. C.

Dear Mr. President:

In the reply of Chairman Wallgren dated July 13, 1950, to your note of July 6, 1950, he advised you that the Commission was having a full investigation made concerning the possible allotment of 175 million cubic feet of natural gas per day for the Consolidated Edison electric generating plant located just south of the United Nations Head-

quarters Building at 42d Street and First Avenue in New York City.

The Commission staff has completed its investigation and has drawn the following conclusions:

1. A smoke and fume nuisance to projects adjacent to the major fuel burning steam-electric or steam-heating generating stations on Manhattan Island has existed for a number of years.

2. With respect to the Waterside steam-electric generating station of the Consolidated Edison Company of New York, Inc., certain modifications were made in 1937 in the design and construction of the plant's stack and flue gas equipment. These alterations relieved to a large extent the smoke nuisance in the immediate vicinity of the station under the conditions prevailing prior to the construction of the United Nations Building.

3. A definite smoke and fume nuisance exists at the upper part of the United Nations Building, particularly that portion lying above the top of the stacks of the Waterside power plant. The building is 75 ft. higher than the plant stacks and is located 900 ft. north of the power plant.

4. Questions have arisen as to possible injury to health of staff members and others who might be in the United Nations Building resulting from contamination of atmosphere from the products of combustion emanating from the stacks of the power plants which might enter the air

conditioning system of the United Nations Building. The fear is that such gases as carbon monoxide, carbon dioxide, and sulphur dioxide might be carried into the United Nations Building through the air conditioning system.

5. An estimate of the probable average maximum contamination of the atmosphere about the United Nations Headquarters appears to indicate that no danger exists from either carbon monoxide or carbon dioxide from the flue gases. The possible concentration of sulphur dioxide at very short intervals, however, could very well cause considerable annoyance and possible temporary illness to susceptible persons if inducted into the air systems. In addition, discoloration of the building by the sulphur dioxide through chemical reaction with the marble surface at each end is probable.

6. Both the City of New York and the utility company have given note to the matter.

7. Of the several suggestions made to alleviate the condition, three appear to have been given serious consideration by those directly concerned.

a. *Substitute Natural Gas Fuel for Coal and Oil.* This alteration—according to the utility company—would entail a capital investment of over ten million dollars and would reduce plant efficiency about seven percent. There would be no obnoxious gases of any kind emitted from the stacks but a preponderance of water vapor might cause some difficulties to the utility. Consolidated Edison Company officials have stated that the company is not proposing the substitution of natural gas.

b. *The Installation of Special Air Washers to Remove All Obnoxious Gases and Fumes.*

The consultants on the air conditioning system for the United Nations Building feel that all atmospheric contaminants can be removed by washers from air drawn into the closed air conditioning system of the Secretariat Building and do not anticipate air contamination in other lower buildings in the sector. This procedure, of course, will not protect the building from discoloration.

7133.

c. *Raise the Effective or Actual Height of the Waterside Plant Stacks.*

The Consolidated Edison Company engineers are conducting wind tunnel tests at the present time on models to ascertain the most efficient and economical method to combat the nuisance. It appears that a towering stack would, probably, carry gas and smoke up to the dispersal level above the United Nations Headquarters. The mechanical difficulties of construction, taken with the hazard to aircraft, aside from the cost of oversize electrostatic precipitation equipment for a single large stack may, however, modify thoughts on this approach to a solution.

8. Analysis of all readily available data on the subject problem and a consideration of how similar nuisance conditions have been handled elsewhere indicates that an alteration in plant stack design and modification to the United Nations Building air cleaning equipment would provide reasonable protection.

The conclusions of the staff completely support the opinion expressed in Chairman Wallgren's letter of July 13, 1950.

Respectfully yours,

THOMAS C. BUCHANAN
Acting Chairman

10000

UNITED STATES OF AMERICA
FEDERAL POWER COMMISSION

In the Matters of

TRANSCONTINENTAL GAS PIPE LINE CORPORATION, NEW YORK STATE NATURAL GAS CORPORATION, TEXAS EASTERN TRANSMISSION CORPORATION, TRANSCONTINENTAL GAS PIPE LINE CORPORATION.

Docket Nos. G-13143, G-13590 and G-13745

Docket No. G-13793

Decision

UPON APPLICATIONS FOR CERTIFICATES OF PUBLIC CONVENIENCE AND NECESSITY

APPEARANCES

For Transcontinental Gas Pipe Line Corporation

James B. Henderson, Esquire, Houston, Texas
William N. Bonner, Esquire, Houston, Texas
Richard J. Connor, Esquire, Washington, D. C.
John T. Miller, Esquire, Washington, D. C.
Thomas F. Ryan, Jr., Esquire, Washington, D. C.

. . . . . .

10001

For National Coal Association; United Mine Workers of America; Fuels Research Council, Inc., and Anthracite Institute

John A. McGrath, Esquire, Washington, D. C.
Jerome J. McGrath, Esquire, Washington, D. C.
Welly K. Hopkins, Esquire, Washington, D. C.
R. E. L. Hall, Esquire, Washington, D. C.

. . . . . .

10002

For Consolidated Edison Company of New York, Inc.
Randall J. LeBoeuf, Jr., Esquire, New York, New York
Halcyon G. Skinner, Esquire, New York, New York

• • • • • • • • • • •

10004

For the Staff of the Federal Power Commission
Robert L. Russell, Assistant General Counsel, Washington, D. C.

William L. Brunner, Esquire, Washington, D. C.
Costello, Presiding Examiner • • •

• • • • • • • • • • •

10012

Questions re G-13590.

5. Is the so-called X-20 Service involving proposed boiler fuel transportation by Transco for Consolidated Edison Company in the public interest?

• • • • • • • • • • •

10022

Question 5 and 6: The X-20 Service, and the rates.

The proposal herein espoused by Transco and Consolidated Edison is an arrangement whereby Transco would carry gas in its facilities for Consolidated Edison for a transportation charge.

Consolidated Edison has contracted to purchase gas from producers in the Normanna and Sejita fields in Texas at 19.25 cents per Mcf. This gas was purchased from producers who restricted its use to electric generation and with the understanding that it would not be resold. There are no escalation, price-re-determination, or favored nations clauses in the contracts. The contracts call for a daily take-or-pay of 50,000 Mcf.

Consolidated's proposed arrangement with Transco calls for this transportation arrangement to be discontinued for as many as 60 days each year, during which Transco will furnish 50,000 Mcf on a firm basis to Consolidated Edison for general system use, including resale. This is referred to as "consumer gas" as opposed to "transportation gas." When Consolidated Edison's own field purchases are thus curtailed, it is necessary for these curtailments to be made up later in order to comply with the Consolidated Edison producer contracts.

The gas purchased by Consolidated Edison from Transco will be purchased on the same basis as the regular CD-3 gas, or 34.23 cents per Mcf. The transportation charge to Consolidated Edison for gas from Consolidated Edison's sources will be 23.38 cents, but may be changed as Transco's CD-3 rate is changed.

Transco will charge 19.5 cents per Mcf for transportation of the so-called "displaced gas"—*i.e.*, the excesses over 50,000 Mcf which Consolidated Edison may take from Texas to make up for curtailments occurring during the 60 days when Transco's "consumer gas" is occupying the space in the pipeline.

Apparently, the reserves behind Consolidated Edison's Texas contracts are adequate. Testimony in the record reflects the belief of an expert, unchallenged, that the presently proven reserves could be maintained at the rate of 50,000 Mcf per day for about 19 years. This comment on the extent of Consolidated Edison's own reserves is not meant to indicate any belief by the examiner that such data is essential to a determination of this phase of Transco's certificate application. The lack of necessity for such proof herein will appear as this matter is further discussed.

Consolidated Edison's avowed purpose in bringing this

arrangement to a successful conclusion is its plan to reduce materially stack emissions from its Waterside steam-electric plant in mid-town Manhattan, New York City. These emissions have been a constant source of irritation to the neighborhood in which, incidentally, a distinguished neighbor, the United Nations, maintains its world headquarters, much favored by sightseers.

The offending steam-electric plant actually consists of two plants, designated as Waterside No. 1 and Waterside No. 2, both of which now use coal. The steam produced at Waterside is used to generate electricity and is used for heating of buildings in various sections of Manhattan. The station is 57 years old and was established in its present location when the area did not amount to much from an aesthetic standpoint. The equipment at Waterside has been modernized over the years. Waterside No. 1 is more modern than No. 2, and has

newer boilers and dust collecting equipment. There is no present proposal to convert Waterside No. 1 to natural gas.

Waterside No. 2, the villain in the piece, consists of eight boilers and related equipment and these were installed during the period 1937-1942. The smoke stacks, called No. 1 and No. 2, pollute the atmosphere. However, the smoke stacks merely emit what comes to them, and it is boilers No. 71 and 72 which have caused the annoyance. At average annual boiler output the stacks at Waterside emit 1,121 pounds of fly ash per hour which includes approximately 269 pounds of carbon. Boilers 71 and 72 alone release approximately 42,000 pounds of sulphur dioxide into the city's atmosphere each day. It is in these boilers that Consolidated Edison plans to burn natural gas on a firm basis throughout the year. As pointed out in the brief of the coal and labor interests, from which much of this narrative has been taken, no natural gas has been

burned in the Waterside station in the past even though substantial volumes of valley gas have been used in other stations on the system ever since the company commenced taking natural gas from Transco in 1951.

In the spring of 1957, Consolidated Edison began negotiating for a direct purchase of gas in the southwest. The record suggests that the prospect of such sale without any need for the producers to obtain certificates under the Natural Gas Act might have had some effect on the ease with which the arrangements were completed. The coal interests suggest that the insistence by the producers that this gas be used for electric generation caused Consolidated Edison to devise this 60-day arrangement with Transco so that Consolidated Edison's general gas distribution system would achieve some benefits and in so achieving, the boiler fuel transportation service would "appear a little more palatable in the public interest."

It should be pointed out that there are two objectors to this boiler fuel transportation matter. The coal and labor interests are "deeply disturbed over the proposed displacement of coal in the Waterside plant" for economic reasons. Nearly a million tons of coal are burned at Waterside No. 2 annually, and between half and three quarters of that amount will be displaced. Secondarily, the coal and labor interests recoil at the prospect of natural gas, a premium fuel, being used in great quantities for such an inferior use. This, it is urged, is in complete conflict with an enlightened conservation policy. The coal interests' brief also sets forth at some length a discussion of the merits of Consolidated Edison's proposal, pointing out that there are numerous ways Consolidated Edison could alleviate the smoke nuisance of boilers Nos. 71 and 72 if it chose to do so, and what Consolidated Edison regards as very, very expensive and time-consuming could be done at less cost than is estimated by Consolidated Edison.

The Staff's opposition to the proposed X-20 Service is based upon the following reasons:

1. Consolidated apparently is not violating the standards set up in the New York City ordinance (Tr. 1355), but merely the indefinite nuisance provisions thereof (Tr. 1421-1422);

2. No statistical evidence of the alleged harm to persons or structures is available (Tr. 1413-1417);

3. Consolidated has been aware of this problem for many years, but has made no plans to shift the load to other and newer stations, thus relieving the conditions at the offending stations (Tr. 1346);

4. The proposal partially nullifies the benefits to be derived from the proposed storage of gas in the summer in the Leidy Storage Field and its withdrawal in the winter for superior uses, such as domestic and commercial consumption; if carried to the extreme of 120,000 Mcf per day proposed by Consolidated it would almost completely nullify the Leidy project;

5. The proposal is obviously an attempt to evade the jurisdiction of the Commission over the sale of natural gas (Tr. 1353-1354) for use in the large consuming centers of the country and thus may be contrary to the public interest;

6. The purchase of natural gas by and transportation for the ultimate consumer, as proposed herein, may make it difficult for pipe line companies to purchase gas at reasonable prices for resale to other customers who require the gas for superior domestic and commercial uses and thus may be contrary to the public interest;

7. Conservation of natural resources for the use of the many customers who require natural gas for such superior uses as domestic and commercial fuel instead of abatement of a nuisance for the few, which could be cured by other means, is in the public interest.

Consolidated Edison in answer to these objections points out that if this Texas gas were not to be used in New York City for boiler fuel, it is probable that it will not be transported anywhere in interstate commerce, and indeed it might even be used in Texas as

boiler fuel, since the space heating and domestic market in Texas is surfeited. The major point made by Consolidated Edison is that this arrangement is really not the concern of the Commission except in that Transco's jurisdictional sales service or capacity might be impaired or adversely affected. Consolidated Edison maintains that Transco is performing a transportation service—and how or for what Consolidated Edison may use this gas, is not important, so long as the jurisdictional activities of Transco are not adversely affected.

And in countering the Staff's plaint that this sort of non-jurisdictional activity by Consolidated Edison should be halted as an example to others who may similarly attempt to avoid regulation in this way, Consolidated Edison suggests that there are many uses of natural gas which do not come within the Commission regulatory sphere, and these uses are lawful and may be as much in the public interest as the uses regulated by the Commission.

It would seem that Consolidated Edison is on firm ground insofar as these contentions are concerned. There is no true basis for inquiry as to whether Consolidated Edison's proposed use of this natural gas is in the public interest or not. Consolidated Edison purchases this gas in the fields in Texas. Were it authorized by its charter, it could, conceivably, use this gas in Texas. Obviously, the Commission would not be concerned with such use. Consolidated Edison, however, has chosen to transport this gas to New York. Conceivably it might have liquified the natural gas and transported it to New York by

refrigerated barge or tank car. The Commission would have no interest in such an arrangement, nor to any end use Consolidated Edison might make of such gas. The method by which Consolidated Edison has chosen to transport its gas is by means of Transco's pipeline, in space which is being built into the Transco facilities for this purpose. Consideration must be given to pipeline capacity, and consideration must be given to the charge or rate to be made for this service. The Commission, however, has no legal basis for inquiry into the merits of the proposed end use so long as that use has no relationship or effect upon consumer service stemming from jurisdictional natural gas.

For this reason, the finding which is here made, that there is no evidence of any prospective adverse effect by reason of this proposed transportation service on any of Transco's regulated activities ends the inquiry and it must, therefore be approved in principle.

The possibility that other distributors may follow Consolidated Edison's example and seek to make similar arrangements has nothing whatever to do with this case. If there is something inherently harmful to the public about such activity, it is the function of Congress, not this Commission, to take steps to provide for regulation of it, or even to prohibit it.

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In the event the Commission does not agree with the legal conclusion which eliminates inquiry into the public interest aspect of the end use, the following observations and findings are made. It is not believed that such findings are necessary herein for disposition of this matter, but are presented so the Commission will have the Examiner's views if desired without necessity for remand.

If the Commission had legal authority to inquire into the public interest aspect of this proposed boiler fuel use,

it would appear that Consolidated Edison and Transco have not sustained their burden of establishing that this service is required by the public convenience and necessity, and this aspect of the certificate sought should be rejected.

There is no question but that the smoke stacks involved here deposit much fly ash and particulate matter in the congested neighborhood in which they are located. That this deposit is unpleasant and unhealthful (but, like cigarettes, to some unknown degree) there can be no doubt. However, it must be assumed that the municipal authorities of New York City are performing their functions properly and are looking out for the health and welfare of the city's congested millions. If this smoke were truly of serious consequence, can there be any question but that the city would require Consolidated Edison to close down these offensive boilers? After all, these boilers carry only about 2 percent of the system electric load, which is well within what most utilities

have as reserve capacity. Consolidated Edison points out that the steam heating load is of greater importance than the electric load but avoids the claim that the steam heating load cannot be carried by inoffensive equipment by shifting that equipment's loading to the exclusive production of steam for heating, if necessary.

If the smoke from Waterside No. 2 were provably injurious to life or health or *if* the economic losses, (such as lowering of real estate values, high cleaning costs for buildings) were outstanding; *if* the city's health officials were legally powerless to act on a matter they had determined to be dangerous, *if* it was not possible for Consolidated Edison to shift load to other stations and close down these boilers, then we could say without doubt that this proposal would be in the public interest and required by

the public convenience and necessity. As a matter of fact, if all these *ifs* were established by the record, the use of this gas for boiler fuel would be markedly more necessary and valuable than for home space heating, cooking or water heating!

The record in this case does indicate that Consolidated Edison should do something about these annoying smokers —and whether that something in the absence of utilizing natural gas is to renovate the equipment, raise the stacks, or shift the load to some other plant is a matter for others to determine. The opportunity for discussion and speculation on this point is virtually limitless.

Before leaving this subject, which was briefed in great detail and with considerable skill by the interested parties, it might be well to note that the gas transportation plan does have very demonstrable and real benefits for Consolidated Edison's gas customers, in that this transportation gas may be switched to regular consumer CD gas when the occasion requires. However, these benefits are obtainable in other ways than by this arrangement and these benefits should not be regarded as being a special attraction. Also there are clearly some savings to be achieved by Consolidated Edison in the use of this gas instead of coal at Waterside, and if such savings are not lost in the shuffle of rising costs of system operation, might be expected to benefit all of Consolidated Edison's retail customers.

10486

UNITED STATES OF AMERICA
FEDERAL POWER COMMISSION

Docket Nos. G-13143, G-13590 and G-13745
Docket No. G-13793

In the Matters of

TRANSCONTINENTAL GAS PIPE LINE CORPORATION, NEW YORK STATE NATURAL GAS CORPORATION, TEXAS EASTERN TRANSMISSION CORPORATION, TRANSCONTINENTAL GAS PIPE LINE CORPORATION.

Before Commissioners: JEROME K. KUYKENDALL, Chairman; FREDERICK STUECK, WILLIAM R. CONNOLE, ARTHUR KLINE and JOHN B. HUSSEY.

Order Denying Certificate of Public Convenience and Necessity and Reversing in Part Initial Decision of Presiding Examiner

(Issued January 30, 1959)

By the Commission's Opinion No. 315 and accompanying order issued herein September 4, 1958, in passing on the presiding examiner's initial decision issued July 9, 1958, and exceptions thereto, we granted Transcontinental Gas Pipe Line Corporation (Transco) a certificate of public convenience and necessity under Section 7(e) of the Natural Gas Act (Act) authorizing the major part of the system expansion the company proposed in these proceedings. We deferred decision, however, on two questions which we shall here decide: (1) whether to grant a request by Transco for a certificate under Section 7(e) authorizing a combined gas transportation and peaking service under a proposed Rate Schedule X-20, involving, *inter alia*, the transportation of 50,000 Mcf of gas per day for the Consolidated Edison Company of New

York, Inc. (Consolidated Edison), which would purchase the gas from producers in the field and use it as boiler fuel for generating electricity and producing steam for steam heat in its Waterside No. 2 Plant in mid-town Manhattan; and (2) whether to grant a request by a Virginia distributing company, Lynchburg Gas Company, that Transco be authorized under Section 7(e) to sell 6,500 Mcf per day of gas to Lynchburg Gas Company's subsidiary, Lynchburg Pipe Line Company, which would in turn sell interruptible gas to an industrial user, the Mead Corporation, for boiler fuel, and during peak periods to Lynchburg Gas Company for resale.

The Commission's staff recommended against the former and in favor of the latter project, with certain conditions. The presiding examiner would grant them both, subject to certain qualifications. In our view, neither project should be authorized, for the reasons hereinafter set forth.

Considering first Transco's proposed X-20 service to Consolidated Edison, Transco seeks permission to construct and operate 50,000 Mcf of daily capacity costing an estimated $20,000,000, wherewith to render

under a proposed Rate Schedule X-20 what may be described as three natural-gas services to Consolidated Edison. First, Transco would transport for Consolidated Edison up to 50,000 Mcf per day of gas, denominated "transportation" gas, purchased by Consolidated Edison from producers in Texas, for not less than 305 days of the year, to be used in Consolidated Edison's Waterside No. 2 generating station in Manhattan for boiler fuel. Second, Transco would sell to Consolidated Edison up to 50,000 Mcf of gas per day for 60 days or less of the year from Transco's own reserves, to be resold by Consolidated Edison to meet its peak loads or for other uses, since such gas is not restricted as to its disposition. This gas, which

is referred to as "consumer" gas, Transco is required to make available at Consolidated Edison's request in lieu of "transportation" gas.[1] Third, insofar as deliveries of "consumer" gas displaced "transportation" gas, Consolidated Edison would be entitled to receive delivery of equivalent volumes of "transportation" gas when Transco has capacity available. This gas has been referred to as "displaced" gas and would be gas purchased by Consolidated Edison in the field from producers.

The Commission's staff and certain interveners oppose the issuance of a certificate for this service for a number of reasons. They argue, first, that the public convenience and necessity does not require authorizing a transaction of this character, involving the purchase of gas by a power or distributing company in the field and the transportation of such gas by a natural-gas pipeline company to the market, since this in effect would avoid Commission regulation of the rate for the sale of the gas by the producer and could thus defeat an important purpose of the Natural Gas Act of protecting the consumer from excessive rates, and thus be contrary to the public interest. It is argued that if we authorize this transaction, other companies may seek similar or extended arrangements to the detriment of the rate payer.[2]

Second, it is argued that this and similar proposals could have effects on the operation of pipeline facilities detrimental to the interests of the consumer, since such proposed service would involve the pre-emption of capacity which would otherwise be available for the use of domestic and commercial customers. For example, it is argued that

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[1] Transco's cost allocation exhibit in these proceedings (Exhibit 18) shows annual sales of 912,500 Mcf of "consumer" gas, or the equivalent of only 18¼ days' use of the 50,000 Mcf of capacity.

[2] In fact, Consolidated Edison and Transco contemplate increasing the X-20 service to 120,000 Mcf of gas per day.

Transco's proposed X-20 service, if carried to the extreme of 120,000 Mcf per day contemplated by Consolidated Edison, would substantially offset the benefits of the Leidy Storage project authorized in our Opinion No. 315.

Third, it is argued that purchases in the field of this character, since not subject to Commission jurisdiction, would tend to give rise to increased prices in the field, to the detriment of pipeline purchasers seeking to buy gas to serve domestic and commercial users, and thus be contrary to the public interest.

Fourth, it is argued that the transportation gas under the X-20 proposal would be used principally for boiler fuel in generating electricity, an inferior use which should not be permitted absent a positive showing under our Opinion No. 250 in the *Mississippi River Fuel Corporation* case, 12 F. P. C. 109, 112 (1953), and that such a showing has not been made. It is argued that the end use of this gas for boiler fuel, when considered along with the other elements of public convenience and necessity as contemplated by our order issued December 15, 1955, in *Matter of Transcontinental Gas Pipe Line Corporation (On Reopening)*, Docket No. 1783, is not justified by the claimed benefits of alleviating air pollution resulting from the use of coal under certain of Consolidated Edison's boilers. It is argued that there is no substantial evidence of harm to persons or structures by reason of such air pollution, and that Consolidated Edison over the years has not exhausted other possibilities for relieving the smoke nuisance. And it is contended that in any event, the desirability of conserving this natural resource for the use of the many customers dependent thereon for superior uses outweighs such benefits as would accrue to the relatively few who would benefit from the abatement by this means of the smoke from Consolidated Edison's boilers.

The decision we must make in this case is a particularly difficult one, since it involves fact and policy considerations not encountered in the usual case, the weight of which is difficult to determine. Militating in favor of the X-20 service is the fact that most of the conventional requirements of public convenience and necessity—matters of markets, facilities, gas supply, and to a substantial extent, rates[3]—are satisfied. Likewise, the idea of relieving the United Nations headquarters of an unpleasant and annoying smoke nuisance from the particular boilers in which this gas is proposed to be burned is an appealing one.

This case involves more than merely the conventional requirements of public convenience and necessity. Opposing the grant of the X-20 service are a number of important factors, chiefly policy considerations. In our judgment, countervailing factors suffice to tip the balance against the grant of the authority requested by Transco.

Certainly, if we were to grant this request we would soon be confronted with many requests of the same general character; and granting the X-20 proposal, we would have no fair or rational basis for denying similar such requests. Likewise, the authorization of this and like proposals would pre-empt for this usage capacity which would otherwise be available to meet more urgent and widely beneficial public needs, even though the bare authorization here sought would not of itself entirely nullify the Leidy Storage project.

10489

Gas distributing companies may find it to the advantage of their customers to seek their new sources of gas in the field rather than to rely on pipeline suppliers to do so. But there are risks of grave disadvantage as well.

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[3] The rate for the transportation of the "displaced" gas has not been substantiated on the record, however.

The impact of large demand on relatively limited supply is certain enough to raise rates and field prices if only one bidder is bringing that demand to bear on the supply. How much more serious is that impact when it is in the form of multiple bidders, each attempting to reserve to itself a firm supply. Inevitably, there would be upward pressure on rate levels in the fields. We do not believe we ought to encourage such when it is unnecessary. But there is at least one other drawback.

Large purchasers of gas, like Consolidated Edison, can readily compete with pipelines for gas purchases. Here, for example, out of approximately 100 million Mcf that is proposed ultimately to be brought through Transcontinental's lines for Consolidated Edison's use in 1961,[4] almost 44 million Mcf would be under a purchase-contract carriage arrangement.[5] That is the equivalent to a pipeline of about 120,000 Mcf per day capacity at 100% load factor. But the smaller purchaser may not be as fortunate. He will have to rely on the pipeline supplier. And how long the pipeline can continue to buy in competition with nonjurisdictional, large volume purchasers, or indeed, how willing it might be to undertake such less desirable service, is at least a question.

These are all factors that weigh against the grant. They would confound and make more difficult a decision in such a case as this even if the gas were to be used for a demonstrably superior use. But when the purpose for which the sale would be made is something less than desirable, they take on more serious, even controlling, significance.

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[4] This volume is arrived at by subtracting from the total of 109,000 million Mcf shown by Exhibit No. 22, Sheet 11, volumes which Consolidated Edison would secure from sources other than Transco.

[5] Exhibit No. 22, Sheet 11, Docket No. G-13590, *supra*.

It is true that we have in exceptional instances authorized the transportation by pipeline companies of natural gas purchased by power companies as boiler fuel. See, *e.g.*, Commission Opinion No. 301 issued December 28, 1956, in the *Houston, Texas Gas and Oil Corporation* case, 16 F. P. C. 118.[6] In such cases, however, there were present offsetting benefits to the public which outweighed the detriments of the service—for example, the making possible of a new fuel supply to a region lacking in native fuel resources as in the *Houston, Texas* case, or some other substantial benefit. However, in this case there are no such substantial benefits to the consuming public to outweigh the detriments cited above. On such a record, we must deny the permission requested.

With respect to end use, the presiding examiner took the position, in concluding to authorize Transco's X-20 proposal, that the end use of gas is not a factor to be considered in applying the standard of public convenience and necessity to a proposed transportation, so long as the end use has no relationship to or effect on any jurisdictional service. On the alternative that end use is to be considered, however, the presiding examiner was of the view that the X-20 service should be denied.

Although we agree that the X-20 service should be denied, we disagree with the presiding examiner's conclusion that end use is not to be considered in a case of this kind. The Court of Appeals for the District of Columbia Circuit held in *National Coal Association* v. *F. P. C.*, 191 F. 2d 462, 467 (1951), that, with respect to a "sale" of gas, end use is an element to be considered in the "complex" of public convenience and necessity, although not

[6] There we pointed out that it was the atypical conditions prevailing in Florida which justified authorizing the transportation of huge volumes of gas purchased by power companies in the field for use as boiler fuel.

a determinative factor, and we have similarly held.[7] And we see no justification for concluding that the same is not true in the case of the "transportation" of gas, to which the standard of public convenience and necessity is equally applicable under the statute. *Cf., Panhandle Eastern Pipe Line Co.* v. *F. P. C.*, 232 F. 2d 487 (CA 3, 1956), *cert. den.*, 352 U. S. 891. Accordingly the presiding examiner's contrary determinations on this issue with respect to the scope of Section 7(e) should be reversed.

10491

The present facts do not support the boiler fuel usage proposed here, however, for the reasons stated herein. As set forth in the foregoing discussion, the other elements of public convenience and necessity outweigh the benefits which would likely flow from authorizing this inferior usage of this gas. Although as indicated, the idea of ameliorating a smoke condition found unpleasant and annoying by the workers in a unique facility, the United Nations headquarters building, is an attractive one, more weighty considerations compel the denial of the grant. In fact, the Waterside station consists of two plants, in only one of which, Waterside No. 2, does Consolidated Edison propose to burn the 50,000 Mcf of gas per day proposed to be transported by Transco. Furthermore, the gas would be burned in only eight boilers at that plant. In addition, the increased volumes of gas which it is contemplated would in the future be transported by Transco—the X-20 proposal contemplates the transportation ultimately of some 120,000 Mcf of gas per day—would not be used at the Waterside station at all but would, it appears, be burned at some other facility. In addition, of the volumes of gas to be utilized by Consolidated Edison in 1960 aggregating some 105,874 MMcf, only 46,560 MMcf would be natural-

[7] See Commission order issued December 15, 1955, *In the Matter of Transcontinental Gas Pipe Line Corporation (On Reopening)*, Docket No. G-1783.

gas sales, as compared with some 55,624 MMcf, or over half, which would be burned beneath Consolidated Edison's boilers. These facts further substantiate the conclusion that the certificate requested herein should not be granted.

In view of our denial of Transco's proposed X-20 service, it is unnecessary to discuss the several exceptions to the presiding examiner's decision to grant this service.

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The Commission further finds:

(1) Transcontinental Gas Pipe Line Corporation, a Delaware Corporation having its principal place of business in Houston, Texas, is engaged in the transportation and sale of natural gas in interstate commerce, and is a "natural-gas company" within the meaning of the Natural Gas Act, as the Commission has heretofore found.

(2) The transportation of gas in interstate commerce proposed by Transco, and the construction and operation of the facilities therefor, as described herein, in the company's application, and in the record in this case; and the sale by Transco to Lynchburg Pipe Line Company, as described herein, in Lynchburg Gas Company's petition to intervene, and in the record in this case, are subject to the jurisdiction of the Commission and to the requirements of subsections (c) and (e) of Section 7 of the Natural Gas Act.

(3) Transco's application for a certificate authorizing the transportation of gas in interstate commerce to render service to Consolidated Edison under Transco's proposed Rate Schedule X-20, and the construction and operation of facilities therefor, as described above, is not required by the public convenience and necessity and should be denied.

* * * * * * * * * *

(5) The presiding examiner's initial decision issued herein on July 9, 1958, should be reversed with respect to the matters and issues deferred in Opinion No. 315 and accompanying order issued September 4, 1958, as hereinabove described; and exceptions to the said initial decision, except to the extent hereinabove granted, should be denied.

10494

The Commission orders:

(A) Transcontinental Gas Pipe Line Corporation's application for a certificate of public convenience and necessity authorizing the transportation of natural gas in interstate commerce to render service to Consolidated Edison under Transco's proposed Rate Schedule X-20, and the construction and operation of facilities therefor, as hereinabove set forth, is hereby denied.

. . . . . .

(D) The presiding examiner's initial decision issued herein on July 9, 1958, is hereby reversed with respect to the matters and issues deferred in Opinion No. 315 and accompanying order, as hereinabove described; and exceptions to the said initial decision, except to the extent hereinabove granted, are hereby denied.

By the Commission. Commissioner Kline concurs in the result but not in all of the reasons advanced in support thereof. Commissioner Hussey dissenting.

/s/ Joseph H. Gutride
Joseph H. Gutride,
Secretary.

10673

UNITED STATES OF AMERICA
FEDERAL POWER COMMISSION

Before Commissioners: JEROME K. KUYKENDALL, Chairman; FREDERICK STUECK, WILLIAM R. CONNOLE and ARTHUR KLINE.

Docket Nos. G-13143, G-13590 and G-13745
Docket No. G-13793

In the Matters of

TRANSCONTINENTAL GAS PIPE LINE CORPORATION, NEW YORK STATE NATURAL GAS CORPORATION, TEXAS EASTERN TRANSMISSION CORPORATION, TRANSCONTINENTAL GAS PIPE LINE CORPORATION.

Order Denying Applications for Rehearing

(Issued March 26, 1959)

Applications for rehearing of the Commission's order issued January 30, 1959,[1] in the above-entitled proceedings, were filed by Transcontinental Gas Pipe Line Corporation (Transco), Consolidated Edison Company of New York, Inc. (Consolidated Edison) and the City of New York on March 2, 1959; and by Lynchburg Gas Company on February 24, 1959. The first three applicants named complain of our denying Transco a certificate of public convenience and necessity under Section 7(e) of the Natural Gas Act (Act) for a natural-gas service under a proposed Rate Schedule X-20, involving *inter alia*, the transportation by Transco for Consolidated Edison of 50,000 Mcf of gas per day. Consolidated Edison would have purchased the gas from producers in the fields, accepting delivery from Transco in New York City, and using

[1] By errata notice issued March 4, 1959, this order was designated Opinion No. 315-A.

the gas as boiler fuel in generating electricity and producing steam for steam heat in its Waterside No. 2 Plant in mid-town Manhattan. Transco and Consolidated Edison request that we reverse this aspect of our opinion and issue Transco the certificate for the X-20 service requested.[2]

. . . . . .

We conclude that no sufficient reason has been shown to reverse the above-described opinion or any part thereof, and accordingly we shall deny the above applications for rehearing.

10674

Consolidated Edison and Transco contend first, in support of their applications, that the Commission, in passing on the public convenience and necessity, erred in relying on "policy considerations", as we called them in Opinion No. 315-A, other than the conventional factors usually considered in the ordinary case. They object to our considering various possible adverse effects on the public of granting the X-20 authorization and similar such authorizations. Included among these were the effect of stimulating increased purchases of gas in the field by distributing companies in substitution for the present, prevalent types of interstate natural-gas services involving purchases and resales by natural-gas pipeline companies; the effect of pre-empting pipeline capacity which would otherwise be available for more widely beneficial public service; the effect of making it more difficult to meet the requirements of smaller purchasers in the event arrangements of this type become wide-spread; and the effect of increasing the rates for gas, to the detriment of the consumer. We also considered the proposed inferior end use of the gas. The companies argue that such matters are beyond the scope

[2] The City of New York relies on the arguments advanced by Consolidated Edison in the latter's application, and in disposing of the latter's arguments we dispose also of those of the City of New York.

of the "public convenience and necessity" under Section 7(e) of the Act and that, in any event, we found in our order that the "conventional" elements of public convenience and necessity were satisfied. Accordingly, it is contended that our order is unjustified, arbitrary, in excess of Commission authority, and not in accordance with law.

We find that these and the companies' related objections are without merit. The courts have long held that the "public convenience and necessity" is not a phrase of fixed content to be mechanically applied regardless of the diversity of facts presented in particular cases. On the contrary, the statutory standard encompasses many considerations which in number and importance vary as the circumstances of the cases vary, subject to the existence of certain conventional minimum requirements which must be satisfied in every case. Accordingly, we must interpret the standard of "public convenience and necessity" in the light of the facts of each case, giving it a scope consistent with the broad purpose of the organic statute and applying it in pursuance of the policies the Act is intended to serve.[3]

10675

These general principles are fully developed in the Supreme Court cases cited. *City of Pittsburgh* v. *F. P. C.*, 237 F. 2d 741, represents a concrete application of them. There the court held that in passing on a certificate application, we cannot ignore the "national policy" against

[3] *U.S.* v. *Detroit Navigation Co.*, 326 U.S. 236, 241 (1945); *National Broadcasting Co.* v. *U.S.*, 319 U.S. 190, 216 (1943); *I.C.C.* v. *Railway Labor Executives Ass'n*, 315 U.S. 373, 376-377 (1942); *F.C.C.* v. *Pottsville Broadcasting Co.*, 309 U.S. 134, 138 (1940); *Radio Comm'n* v. *Nelson Bros.*, 289 U.S. 266, 285 (1933); *Chesapeake & Ohio Ry.* v. *U.S.*, 283 U.S. 35, 42 (1931); *City of Pittsburgh* v. *F.P.C.*, 237 F. 2d 741, 754-755 (CADC, 1956); *National Coal Ass'n* v. *F.P.C.*, 191 F. 2d 462, 467 (CADC, 1951); *Scripps-Howard Radio* v. *F.C.C.*, 189 F. 2d 677, 680 (CADC, 1951), *cert. den.*, 342 U.S. 830.

monopoly expressed in the anti-trust laws or ignore considerations respecting the possible imperilment of the national defense, even though such factors have been placed especially within the ken of other governmental authorities which are more directly responsible and competent in these spheres than we. Likewise, the court held that in considering whether the proposed abandonment of a pipeline for gas transmission was justified by the public convenience and necessity, the Commission should consider whether such abandonment would increase the cost of future expansion by the pipeline, notwithstanding that no application for expansion was pending and any interests which might be affected by future expansion could be urged at the hearing on any future applications which might be filed.

In the light of this and the other decisions cited, it is evident that the factors on which we relied in Opinion No. 315-A were properly considered in deciding whether to issue the certificate requested by Transco. In our judgment, all these factors have reasonable bearing on the public convenience and necessity under the Act. The fact that some of them pertain to the future is no objection, for the explicit language of Section 7(e) requires that we consider not just the "present" but the "future" public convenience and necessity as well. Nor is it of any consequence that we characterized them as "policy" considerations; however they may be denominated, the court decisions cited above recognize that such considerations are properly to be considered. Likewise, the fact that in most particulars the "conventional" requirements of public convenience and necessity were satisfied still does not require the issuance of a certificate, under the judicial requirements stated above. For the particular facts of this case give rise to considerations of public need which are not present in the conventional case and this demands an interpretation of the Act in keeping with its purposes,

and an application appropriate to meet the particular public needs here presented.[4]

However, Consolidated Edison and Transco contend that the Commission has exceeded its jurisdiction under the Act by attempting to regulate non-jurisdictional intrastate sales by the producers in Texas to Consolidated Edison. They argue that the purpose of our opinion was to outlaw the purchase of natural gas in the field by out-of-state utilities, and that such attempted frustration of lawful purchases outside

the Commission's jurisdiction constitutes an unwarranted and unprecedented invasion of an area where Congress has seen fit to leave regulation to the states, an undue discrimination against Consolidated Edison, and an illegal restraint on competition. In similar vein, the companies contend that the Commission has exceeded its jurisdiction under the Act by attempting to regulate the use by the owner of natural gas. They argue that here too, the Commission has under the guise of "policy considerations" extended its jurisdiction over Transco's proposed transportation service to prohibit activities clearly outside the scope of the Commission's authority and reserved to State regulation, namely, the conservation of natural gas, of which end use is one aspect.

The argument that in Opinion No. 315-A we exceeded our powers under the Act by regulation claimed non-jurisdictional field sales is sufficiently disposed of by the foregoing discussion. Judicial decisions also demonstrate the lack of substance to such contention. We are not attempting to regulate such field sales of gas any more than under the court's decision in the *City of Pittsburgh* case, we

[4] Furthermore, we found in Opinion No. 315-A that Transco's rate for the transportation of what was described there as the "displaced" gas has not been substantiated, and that finding we here affirm.

undertake to assume responsibility for the national defense. See also *Michigan Consolidated Gas Co.* v. *Panhandle Eastern Pipe Line Co.*, 225 F. 2d 60 (CA 6, 1955), *cert. den.*, 350 U. S. 987; *Panhandle Eastern Pipe Line Co.* v. *F. P. C.*, 232 F. 2d 487 (CA 3, 1956), *cert. den.*, 352 U. S. 891. And see also *Ambassador, Inc.*, v. *U. S.*, 325 U. S. 317 (1945). Here, in analogy to the cases cited, we are entitled to consider the implications for the future of the grant of a certificate on matters of public concern reasonably within the purview of the Act; and we are likewise entitled to consider what bearing the fundamental policy matters we relied on may have upon the question whether a particular certificate is required by the public convenience and necessity.

Under the same reasoning and judicial authorities, our consideration of the end use of the X-20 gas in determining the public convenience and necessity was proper under the Act, and involves no impermissible interference with State powers to regulate conservation. Nor can it be successfully argued that we erred in considering end use. As we pointed out in our order of which rehearing is sought, it was held in *National Coal Association* v. *F. P. C.*, 191 F. 2d 462, 467 (1951) that, with respect to a "sale" of gas, end use is an element to be considered in the complex of public convenience and necessity, although not a determinative factor; and we see no justification for concluding that the same is not true in the case of the "transportation" of gas, to which the standard of public convenience and necessity is equally applicable under the statute. *Cf., Panhandle Eastern Pipe Line Co.* v. *F. P. C.*, *supra*, 232 F. 2d at 470-471. Contrary to applicants' contentions, we do not view the proposed end use of the gas involved in this case as of decisive importance. In accordance with the *National Coal Ass'n* case, it is but one factor, and that not of determinative importance, which we consider in the exercise of our judgment on all the facts.

However, Transco and Consolidated Edison argue that there is no substantial evidence in the record to support the considerations on which our conclusions are based and that therefore our conclusions are speculative and unproved. For example, they argue that there is no evidence that we would soon be confronted with many requests similar to the X-20 proposal if we were to grant this request and that, in any event, future cases must be decided on their own merits. They contend that there would be no pre-emption of capacity since this capacity has not been built and therefore could not be pre-empted. They argue that there is no basis for concluding that distributing company purchases in the fields would result in upward pressure on rate levels any more than would pipeline purchases. And they contend that we cannot consider the possibility that deliveries under the X-20 service would increase to 120,000 Mcf per day but must limit our consideration to the particular 50,000 Mcf per day proposal before us at this time, even though the record clearly indicates the intention to apply subsequently for authority to increase the 50,000 Mcf to 120,000 Mcf per day.

We are unable to accept these arguments. It must be kept in mind that our function in deciding this case is not just "to appraise the fact and to draw inferences from them;" we must also exercise a "rational judgment" with respect to the problem and "determine from analysis of the total situation on which side of the controversy the public interest lies." *U. S.* v. *Detroit & Cleveland Navigation Co., supra,* 326 U. S. 236 at p. 241; *City of Pittsburgh* v. *F. P. C., supra,* 237 F. 2d 741 at p. 752. In fulfilling this function, inevitably "Forecasts as to the future are necessary to decision." *U. S.* v. *Detroit & Cleveland Navigation Co., ibid.,* p. 241. Nor does the exercise of our judgment as to the future necessitate the existence before

us of a specific application pertaining to the future. *City of Pittsburgh, supra,* pp. 752-753. As far as affecting future certificate applications is concerned, in our opinion the grant of this application would throw open a Pandora's box full of serious difficulties having probably undesirable consequences for the public and the consumer. As to the pre-emption of capacity, of course there can be no pre-emption of capacity not already built; but the construction and utilization of given capacity for service of the character proposed here would reasonably lessen the likelihood of capacity being constructed for other and future service of a character more in accordance with the requirements of public convenience and necessity. Likewise, as to effects on prices in the field, it is reasonable to infer that the existence of many bidders for a given supply of gas would exert more pressure for price increases than would the existence of only a few bidders. Of course, judgments on matters such as these pertaining to the future are inherently less susceptible of absolute demonstration than present facts. Nonethless, on analysis of the "total situation," in our judgment the conclusions reached in Opinion No. 315-A have substantial support in fact.

Finally, Transco and Consolidated Edison contend that we have disregarded their affirmative cases, and failed to consider evidence which substantially supports the issuance of a certificate for the X-20 service,

including evidence of the general and extensive importance of air pollution in New York City and not just in the vicinity of the United Nations Secretariat; expert opinion of the harmful and costly effects of air pollution on health and property in that City; the expense and trouble to which Consolidated Edison has gone to remedy the

situation and the lack of any practicable alternatives on the part of Consolidated Edison for curing the difficulty other than the burning of natural gas in the boilers of the Waterside plant; the fact that air is a natural resource which deserves conservation as much as any other resource; the savings in costs which would accrue to Consolidated Edison and redound to the benefit of its customers; and many other facts and considerations presented in the record and argued in the briefs. In addition, Transco argues that we failed to consider the "policy considerations" embodied in Public Law 159 enacted by Congress in 1955 as a part of the laws pertaining to public health and welfare, an enactment which was designed to encourage research respecting the control of air pollution by local authorities, and Executive Order No. 10779 in pursuance thereof.[5]

We have considered with care all the above factors as well as the others relied on by the companies also. Weighing these factors against the other considerations present in the case, we conclude that the balance swings against the grant of the X-20 service. Contrary to the allegations of the companies, we did consider the matter of air pollution as one of the elements of public convenience and necessity. However, we conclude that, although air pollution exists in New York City, as it does in many metropolitan areas, the evidence falls short of establishing that burning the volumes of gas here in question in Consolidated Edison's boilers would remedy the air pollution in New York City generally in sufficient measure to offset the detriments of the X-20 service. And the same is true with respect to the other claimed benefits of this service. We recognize that the "policy considerations" embodied in Public Law

[5] 42 U.S.C. Sections 1857-1857f. Executive Order No. 10779 was issued August 21, 1958, 23 F.R. 6487.

159 and Executive Order No. 10779 are pertinent here.[6] However, considering the policy considerations expressed in this statute and executive order, we cannot find on all the evidence and in the light of all the circumstances in this case detailed in Opinion No. 315-A and here, that our conclusion to deny the X-20 service by Transco should be modified.

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The Commission further finds:

The assignments of error and grounds for rehearing contained in the applications for rehearing filed herein by Transcontinental Gas Pipe Line Corporation, Consolidated Edison Company of New York, Inc., and the City of New York on March 2, 1959, and by Lynchburg Gas Company on February 24, 1959, set forth no new facts or principles of law which were not fully considered by the Commission when it adopted its above-described Opinion No. 315-A, issued January 30, 1959, or which having now been considered warrant any change or modification of said Opinion.

The Commission orders:

The applications for rehearing of the Commission's Opinion No. 315-A, and order issued on January 30, 1959, in the above-entitled proceedings, filed by Transcontinental Gas Pipe Line Corporation, Consolidated Edison Company of New York, Inc. and the City of New York on March 2,

[6] It is to be noted that respecting this matter, Transco urges that we do precisely what Consolidated Edison contends we erred in doing—namely, rely on "policy considerations" additional to the elements present in the conventional case. Here too the assertion that we erred in heeding "policy considerations", by whatever name they may be called, is demonstrated to be meritless.

1959; and by Lynchburg Gas Company on February 24, 1959, are hereby denied.

By the Commission. Commissioner Kline concurring in the result.

J. H. Gutride,
Joseph H. Gutride,
Secretary.